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The Unsatisfactory Position with regard to the Definition, Diagnosis and Control of "Swine Fever."

By A. W. Noel Pillers, F.R.C.V.S.

During the last few years I have paid considerable attention to the literature and field aspects of "swine fever." As a result, I now find myself greatly at variance with expressed official veterinary opinion and policy, especially with regard to the definition, diagnosis and control of the disease. I know it has been the subject of much enquiry and that many have had cause to regret what they have said or written concerning it. I find, however, that a number of investigators, practitioners, official veterinarians, and well read owners are fully alive to the anomalies of the situation. If science is to lead in the question of animal diseases, then the sooner we as a profession show the way, the sooner will the industry demand what a progressive official department ought to have given it years ago. It is difficult to know what course ought to be pursued in order to express the views of those who have given the matter serious thought, so that the best results may accrue. One would like to see it taken up by our association, but there is so often a tendency with such bodies to agree with official thought and line of action.

The coming of the Pig Industry Council is a matter of some moment. It has already formed five committees, one of which will consider the various diseases affecting pigs, the conditions favourable to the spread of disease and the practical safeguards and precautions which should be taken to prevent disease.

It is to be hoped that the veterinary adviser to this committee will be one who is in closest touch with all the aspects of swine diseases, and not one whose vision has been dimmed by years of official work in a restricted field. The definition of swine fever given on page xii. of the Handbook of Acts and Orders relating to Diseases of Animals, is:—"A contagious eruptive disease caused by a specific virus." This is somewhat vague, but as other terms, such as bacillus, are used in the case of other definitions we may conclude that the word virus is here employed in its restricted sense and refers to a filtrable virus. The definition therefore refers to the disease which pathologists describe in this country as swine fever or hog cholera. That is to say, the American disease and the one occurring here are the same. One could not include ulcerative necrotic enteritis in the definition "A contagious eruptive disease," yet on page xiii. of the official account of swine fever one finds:—"In the more chronic cases the most characteristic change—ulceration—is found in the alimentary canal."

If one refers to the anonymous writer on swine fever in E. Wallis Hoare's "System of Veterinary Medicine," Vol. 1, page 540, under the heading of etiology, one sees quite clearly that swine fever is due to a "filtrable ultra-visible virus," and the position of the so-called swine fever bacillus in the production of "characteristic lesions" is explained even in the absence of the filtrable virus. If a lesion can be produced by a bacillus in the absence of the invisible virus of swine fever, then that lesion is no longer safe for diagnosing the presence of the invisible virus. There is, to my mind, no doubt that in the Handbook, and in the account just given, two diseases, at least, are confused, *viz.*, swine fever, an acute infective septicæmia due to a filtrable virus, and ulcerative necrotic enteritis, due apparently to the so-called swine fever bacillus. There seems to be much evidence that this bacillus is found in the alimentary canals of many swine without apparent ill effects and such animals must be regarded as carriers; when, however, the organisms are in great numbers or when the defences of the alimentary canal are broken down, ulceration may be produced. It seems to be recognised here, from writings of official veterinarians, that swine fever and hog cholera are one and the same disease. Now, if one turns to an account of hog cholera such as that given by A. T. Kinsley, on page 281, of "Swine Practice," one finds that the words ulcer and ulceration are not mentioned throughout the description of the lesions. True there are reproductions of ulcers, but their nature is fully explained, and later, on page 308, a full account of "infectious necrotic enteritis" is given. In view of the confusion which has been pointed out above, it would appear that a full definition is most desirable. Such an one ought to express the nature of the disease, its characters, etiological, symptomatological, and pathological aspects. To-day a practitioner who discovered an acute infective febrile fatal septicæmia (not being swine erysipelas) might report the condition as swine fever and not have it confirmed, yet in an outbreak of the nature of a chronic intestinal invasion with ulcers he might think he was dealing with ulcerative necrotic enteritis and would therefore not report it, although it would have been confirmed had he so done. The evidence of expert witnesses in a law case upon this point would be most interesting reading, but it might have serious consequences for a defendant. There is doubtless confusion of two or more diseases in some of the confirmed outbreaks of swine fever. Nothing has done more to add to this confusion than the peculiar reverence shown to that figment of the puzzled mind, the so-called "swine fever ulcer." It takes an honoured place in museums, is the resting post of the tired field worker, and is an excuse for the troubled investigator to pack up his traps, report to the police and depart to his sheltered laboratory. Outbreaks of so-called swine fever occur where a few unthrifty stores are taken into a healthy herd, one of them dies, the disease is confirmed apparently on ulcers, the unthrifty are killed, yet there is no spread despite every opportunity for it to do so. From delay over week ends, the *post-mortem* changes which take place in the viscera and the fact that often only small pieces of ulcerated bowel are sent away, it seems certain that confirmation is frequently based on this ulceration. With

most of the other scheduled diseases such as anthrax, glanders, tuberculosis, rabies, parasitic mange, sheep scab, and epizootic lymphangitis, we have methods of diagnosis which are satisfactory enough for our purpose, but until the confusion with regard to swine fever is swept away, we have no exact method of determining its presence.

When we recognise the common infective conditions of swine, *viz.*, erysipelas, plague, necrobacillosis, swine fever, ulcerative necrotic enteritis, and perhaps others, then the history, the infective nature of the disease, the condition of habitations, the symptoms, the complete *post-mortem* findings of an animal immediately after death and the method of exclusion ought to help us to arrive at a fairly sound diagnosis.

Nevertheless, there will remain a number of cases where the only way to solve the problem will be to demonstrate the presence of the filtrable virus of swine fever, by inoculation experiments at an institute. From the Annual Report of Proceedings under the Diseases of Animals Acts for the year 1923 and 1926, I have extracted the following table relating to swine fever.

Year.	Number of Outbreaks Reported.	Number of Outbreaks Confirmed.	Percentage of Outbreaks to Cases Reported.
1919	10,358	2,316	22·4
1920	10,694	1,820	17·0
1921	9,507	1,256	13·2
1922	9,241	1,390	14·9
1923	11,768	1,968	16·7
1924	10,921	1,441	13·2
1925	9,202	1,643	18·0
1926	7,642	1,200	15·7
Totals 8 yrs.	79,333	13,034	Average 16·3.

It will be seen that in eight years, out of 79,333 reported outbreaks, only 13,034, or 16·3 per cent. of them were confirmed, so that in 66,299 cases, or 83·7 per cent., official veterinarians were running about mostly on wild goose chases. If each of these negative cases cost only two telegrams of one shilling each, *viz.*, one from the local authority to headquarters, and one from headquarters to its veterinary officer, a sum of £6,629, for 132,598 telegrams, is obtained.

I feel sure all will admit that there must be something wrong with the method of reporting, or diagnosis of, a disease, when 83·7 per cent. of the outbreaks are not confirmed. One expects more reports than confirmations, but four to one, is "safety first" greatly overdone. Much more might be written, but if the definition and diagnosis leave so much to be desired, how can one hope for satisfactory control? If a pig owner has a pig with eversion of the rectum and he reports it to the police as swine fever, a telegram has to be sent to headquarters; cases akin to this constitute quite a number of the 83·7 per cent. of unconfirmed reports. There is, moreover, genuine difference of opinion among veterinary surgeons, because some adopt the views expressed here, *viz.*, reporting only the infective febrile condition, whereas others have learnt the official reverence for the ulcerated bowel type of case. These two conditions may co-exist. Swine fever is dealt with centrally and there is often delay, especially during week ends, and the veterinary surgeon to the local authority makes no preliminary enquiry, as in the case of several other scheduled diseases.

Often when an outbreak is confirmed the official veterinarian licences apparently healthy animals to the nearest slaughter house, where, if they are in fact infected or contaminated, they can spread the virus to pig dealers, travelling slaughtermen, and pig porters, many of whom could transport it to piggeries. This goes on despite the most severe restrictions as to the disinfection of vehicles and persons. There are nine Orders in force which aim at controlling the disease, *viz.*, five relating to swine fever, and four regulating the movement of swine. If it is thought that control is necessary in the interests of the pig breeding industry, then one can conceive that the consolidation of some of these Orders, the recognition of several infective diseases, the use of the veterinary surgeon to the local authority, and the sending of reports, blood or material to a central institute, could all be provided for in an effective Diseases of Swine Order.

Horses for Commercial Transport.

Detailed statistics and comparative tables proving that the horse for short hauls, with frequent halts, is the most economical form of commercial transport are given by The National Horse Association in a pamphlet which has been carefully compiled.

The Association's contention is that in certain trades and for Council work, where short distances only are necessary, the horse will always beat the motor as an economic factor.

The figures given have been supplied by large London and Provincial Firms, Borough Councils, etc., and the tables are instructive and of interest to all who welcome means whereby economy in transport can be effected.

A summary of some of the totals from the comparative tables is as follows:—

A Leading London Stores:—

Single horse van, 19s. 6½d.; 25 cwt. motor van, 28s. 10d.

Pair horse van, 25s. 4½d.; 5 ton lorry, 39s. 8d.

London Carrying Firm:—

Light horse van, 15s. 2d.; 30 cwt. motor van, 34s. 0½d.

Pair horse van, 21s. 5½d.; 4 ton lorry, 41s. 5½d.

Provincial Carrying Firm:—

Light horse van, 14s. 2d.; 30 cwt. motor van, 29s. 9d.

Pair horse van, 19s. 7½d.; 4 ton lorry, 40s. 3½d.

Provincial City Council:—

Light horse van, 16s. 6¼d.; 25 cwt. motor van, 30s. 7¾d.

Copies of the pamphlet can be obtained on application to Mr. R. A. Brown, at 12 Hanover Square, London, W.1.

NOTE BY MAJOR-GENERAL SIR J. MOORE:—

Great credit is due to Mr. Brown, the Secretary of the National Horse Association, for producing so excellent a little brochure. It is very simple and practical; and the carefully compiled statistics of detailed comparative costings of various kinds of motor traction with horse traction will be found useful for reference purposes. It is hoped that members of the profession will send for copies for distribution to their clients and friends. Mention is also made of the desirability of soliciting membership of the Association, the minimum annual subscription to which is ten shillings and sixpence.

The Signs, Diagnosis and Treatment of the Swallowed Foreign Body in the Dog.*

By W. M. MITCHELL, M.B., Ch.B., B.Sc.(Edin.), M.R.C.V.S., Professor of Surgery, Royal Veterinary College, Edinburgh.

The problem of locating a foreign body in the alimentary canal when there is a definite or even a suspected history of one having been swallowed is on the whole fairly easy, for our attention is directed to search for it. If we fail to locate it by the ordinary methods of clinical diagnosis we can have recourse to a radiological examination which will give a definite diagnosis. There are cases, however, where foreign bodies are swallowed by dogs without anyone being aware of the fact, and unless we keep constantly in mind this possibility of alimentary obstruction, there is a danger that a catastrophe which might have been averted may only be discovered on the *post-mortem* table.

I find that to give the details of treatment, especially the operative side, would encroach too much upon the time for discussion, so I have omitted the description of operations.

For convenience, let me consider the subject according to whether the œsophagus, stomach or intestines are affected.

THE ŒSOPHAGUS.

Let me remind you that the œsophagus of the dog is by far the most expansile œsophagus met with in all the domesticated animals. This power apparently lures greedy dogs to swallow large bodies which, if they are irregular, frequently lodge in the œsophagus, causing complete or partial obstruction, and unless removed will often lead to a fatal termination.

It is possible for such irregular bodies to become lodged in any part of the œsophagus, but the majority, in my experience, are to be found in the thoracic part, most frequently just within the entrance to the thorax, due, I think, to the fact that the œsophagus alters its direction to pass dorsal to the base of the heart. The next most common site for obstruction to occur is just between the base of the heart and where the œsophagus passes through the diaphragm.

Signs of Obstruction of the Œsophagus.

At first there will be exaggerated efforts at swallowing, the dog standing with its head down, and, if successful, the foreign body may reach the stomach and the animal may take more food.

If efforts to swallow the body fail, then efforts at vomiting may take place, with usually little success beyond the bringing up of a little saliva and mucus which has collected in the œsophagus anterior to the obstruction. These efforts are usually most marked when the foreign body is lodged in the cervical part of the œsophagus, and definite evidence of the body can usually be easily determined by palpation of the ventral part of the neck.

In cases where the animal has not been observed to swallow a foreign body, particularly if it has stuck in the thoracic part of the œsophagus, the first thing which may be noticed amiss by the owner is that the animal refuses its food both solid and liquid. After a time, fluids are frequently taken readily, this being possible because so often the obstruction is an irregular portion of sheep's vertebra which does not completely occlude the lumen. The fact that an animal will take milk and even sloppy food greedily and be quite lively between such meals, may lead an owner to neglect to seek professional advice for days or even weeks.

A development which may sooner or later appear, according to the nature of the foreign body, will be spread of infection through the damaged œsophagus from pressure necrosis which, if the obstruction is in the neck, will lead to a local abscess. In the thorax, a mediastinal abscess may develop, but sooner or later a septic pleurisy will follow which will cause death.

With the development of the localised septic focus the usual general signs of septic intoxication will be met.

Diagnosis of Œsophageal Obstruction.

The most significant diagnostic sign in the history of the unsuspected case is that an animal refuses solids but will take fluids. If there is doubt on this point, some solid food may be offered the dog, which food, if swallowed, relieves one of the necessity to worry further about the œsophagus.

Palpation of the neck will determine whether the obstruction is situated there.

When the obstruction appears to be in the thorax this can be confirmed and exactly located in two ways.

(*a*) Pass a gum elastic œsophageal bougie (human type)—a horse catheter serves the same purpose—down the œsophagus from the mouth, anæsthetising the dog first, if necessary, and it will come in contact with the foreign body. Grasp the bougie between the forefinger and thumb at the incisor teeth before withdrawing it and then lay the bougie alongside the neck and thorax externally so as to visualise exactly the site of lodgment of the foreign body. Sometimes a bougie may pass an irregular obstruction and reach the stomach, creating a little doubt about the œsophagus being obstructed, but usually even in these a grating sensation can be felt as the bougie passes the foreign body.

(*b*) Diagnosis by means of X-rays, either by screening or by having a photograph taken, the latter giving a more definite shadow if a little bismuth is given, as some is held up around the foreign body. The photograph also serves as a useful guide at the time of operation.

Treatment of Œsophageal Obstruction.

Having diagnosed a definite obstruction of the œsophagus, I believe the only remedy is surgical removal of the foreign body. On no account should attempts be made to push on to the stomach an irregular foreign body, particularly a bone, as rupture of the œsophagus with disastrous results is most likely, and even if successfully passed to the stomach there is the risk that it may again be held up, particularly in the small intestines.

When the foreign body is in the cervical part of the œsophagus, œsophagotomy can easily be performed directly over the swelling.

When in the thoracic part of the œsophagus there are two methods of approach for its surgical removal.

(*a*) Caudal cervical œsophagotomy—opening the œsophagus at the lowest part of the neck after approaching it by the triangle formed by the borders of the following muscles on the left side :—

* Paper presented to the Yorkshire Division N.V.M.A., Leeds, 26th October, 1928.

(1) Sterno-cephalic; (2) Superficial pectoral; (3) Brachio-cephalic.

[Professor Mitchell later demonstrated this operation.]

This method is particularly suitable for a foreign body situated just within the entrance to the thorax, but even for bodies situated over or just beyond the base of the heart it gives a much greater chance of successful removal than the next operation.

(*b*) Removal of a foreign body from the terminal part of the œsophagus through the stomach, after performing a gastrotomy.

This method would only be adopted when the foreign body is close to the cardiac end of the stomach, and even then is a difficult operation, as the termination of the œsophagus is high in the abdomen and at right angles to the line of approach from the abdominal incision, and also the œsophageal opening in the diaphragm does not permit of much stretching to manipulate a foreign body back.

The Stomach.

Probably no dog goes through life without at some time or another swallowing some foreign body which reaches the stomach, but fortunately nature's mechanism to overcome anything which acts as an irritant to the gastric mucous membrane leads, in the majority of cases, to a speedy relief by vomiting. The stomach may, however, act as a passive reservoir for years for foreign bodies, signs of trouble only commencing if the pyloric canal becomes completely obstructed. I am rather inclined to think that in the majority of cases it is only when foreign bodies attempt to pass the pylorus that vomiting occurs.

Signs of Foreign Bodies in the Stomach.

Keeping in mind how foreign bodies may lie passively in the stomach, it is quite in keeping with a definite history of a dog having swallowed a foreign body to find something tangible in the stomach which can often be readily palpated abdominally or discovered by X-rays. Such a dog, to all intents and purposes, may appear in perfect health.

Acute signs do not arise from foreign bodies in the body of the stomach, with the exception of sharp, long, foreign bodies which may penetrate the stomach wall and may lead to peritonitis. Cases are on record of natural recovery through adhesions to the abdominal wall and self expulsion.

The acute signs of obstruction in the abdomen arise from the intestine, though on *post-mortem* examination it is usual to find changes in the stomach wall. Occlusion of the pylorus would, of course, give acute signs of obstruction, but as the signs are indistinguishable from what would be got if the obstruction were in the duodenum, I will include it in Intestinal Obstruction.

Diagnosis of foreign bodies in the Stomach.

This presents no difficulty if there is a definite history of a foreign body having been swallowed. The absence of signs of illness is highly significant of the body lying passively in the stomach or else passing through the intestine without causing obstruction.

Adbominal palpation of the stomach can usually determine its presence if there. There is always the possibility that the foreign body may have been vomited up unobserved. The only satisfactory way to satisfy oneself when nothing has been felt by careful palpation is to have an X-ray examination made.

Treatment of foreign bodies in the Stomach.

In the majority of cases of this type the administration of an emetic should be the first step in treatment—preferably a hypodermic injection of apomorphine. In some few cases an emetic should not be given; for example, if the body is elongated with a sharp extremity, as the risk of perforation of the stomach may be too great.

It emetics fail, then the sooner gastrotomy is done the better, as there is the great risk of an acute intestinal obstruction developing, if the body lodges in the intestine, or of peritonitis following perforation.

[The operation of gastrotomy was subsequently demonstrated by the author.]

The Intestines.

I must confess that this part of the subject is the one I find the greatest difficulty in knowing exactly how to approach so as to give, in the limited time at my disposal, a connected resumé of the problems associated with obstruction of the intestine.

The relative frequency of acute intestinal obstruction, due to a definite foreign body, is comparatively rare compared with the number of cases of intestinal obstruction from other causes met with in practice. This is due to the fact that most foreign bodies are vomited from the stomach, some lie dormant there, and others, if they pass the pylorus, may find their way through the intestine without ever exciting any suspicion. Every now and again, however, a foreign body may lodge in the small intestine and then follow, very rapidly, all the signs of an acute intestinal obstruction. Conditions which produce a similar picture or one closely resembling it I will discuss more fully when I come to diagnosis.

Signs of Acute Intestinal Obstruction.

A typical case of obstruction about the centre of the small intestine will run a clinical course such as this:—Initial abdominal pain from exaggerated peristaltic efforts, taking the form of restlessness and more frequent attempts to defæcate, often passes unobserved, the first sign an owner usually observes being vomiting. This goes on repeatedly. At first the vomit will be frothy gastric contents; later it is mixed with bile; later still, the watery-like fluid becomes coffee coloured and is brought up very easily. This is what is called fæcal or stercoraceous vomit, the dark colour being due to the exudate from the congested intestine proximal to the obstruction; it is not really fæcal. By this time shock is very marked, as evidenced by the pale visible mucous membranes, coldness of the extremities, and shallow quick breathing. The pulse becomes very rapid and towards the end is imperceptible; temperature is subnormal, though I have a record of a case with a temperature rising to 110°F. just before death. Finally, the case merges into complete collapse with coma, the animal being unable to raise its head or recognise its master.

This train of events is aggravated by the loss of fluid from the system through the persistent vomiting. and the absorption of toxins from the distended bowel proximal to the obstruction, and will end in death in about 24—36 hours if no relief is obtained.

The length of time an animal may survive intestinal obstruction varies considerably according to the site of

the obstruction. The nearer the obstruction is to the pylorus the more rapid the development of toxic signs and death, whereas complete obstruction of the descending colon may last for days or even weeks before signs of intoxication manifest themselves. This delay is due to the ileum, cæcum, and ascending colon being the great absorptive parts of the alimentary tract so that, until these parts are damaged by the accumulation of toxins proximal to the obstruction, dehydration of the body does not take place.

Perhaps the water absorbed into the system dilutes any toxin entering at the same time and the tissues of the body do not receive an overwhelming amount of it.

Pathology of Acute Intestinal Obstruction.

The changes which occur in the bowel which is obstructed by a definite foreign body in its lumen give a clear picture of what occurs in obstructions generally and appear to me to be helpful in understanding other conditions affecting the bowel which are considered to be outside the realm of a mere surgeon.

Before opening the bowel at and proximal to the obstruction, it is seen to be congested, and if the condition is far advanced purple in colour; it is also distended with fluid and sometimes gas. The stomach is dilated and also contains a good deal of fluid. The bowel below the obstruction, on the other hand, is pale and empty. On opening the bowel the fluid contents are found to be watery and coffee coloured and the walls show the mucous membrane deeply congested and œdematous, with sometimes shedding of the surface epithelium. If the obstruction is near the pylorus similar congestion of the gastric mucous membrane may be seen, but very often death has resulted before the gastric mucous membrane is much, if at all, congested, though the dilated stomach may contain a considerable quantity of fluid regurgitated from the duodenum.

The dilation of bowel and stomach is partly due to paralysis of the muscular coat. Where an animal has been allowed to die there may be a little dark fluid in the peritoneal cavity, exudate from the serous surface of the congested bowel; there is not a general peritonitis, as death has occurred too rapidly.

The liver shows marked congestion, probably due to toxin carried by the portal vein damaging the delicate lining wall of the sinusoids, so that they become greatly engorged.

Cause of Death in Acute Intestinal Obstruction.

I have already indicated that death is attributable to two factors:—

(1) Toxæmia from toxins developed in the bowel proximal to the obstruction.

(2) Hydræmia of the body tissues.

What the nature of the toxin is, is still doubtful. According to Williams,[1] the toxæmia of intestinal obstruction results, in part at least, from the absorption of the toxin of *B. welchii* due to the proliferation of this anærobe in the stagnant contents of the small intestine. He experimentally ligatured the ileum of five dogs, producing acute obstruction, and found at death *B. welchii* to be present in the stagnant contents in enormous numbers, and the filtrate contained *B. welchii* toxin, which was lethal for unprotected mice, whereas mice protected by *B. welchii* anti-toxin survived.

The immediate cause of death, I think, is due to a fall in blood pressure (sign—imperceptible pulse). The collapse and coma are probably due to interference with the circulation and oxygen supply to the vital centres of the central nervous system from the loss of fluid occurring in the congested bowel and also from the loss of effective blood in the congested liver.

Differential Diagnosis of Acute Intestinal Obstruction.

In the search for a definite diagnosis I purpose reviewing the possible likely conditions which may affect the gastro-intestinal tract and produce signs similar to, or resembling, those I have just described.

The symptom-complex which I have tried to focus your attention upon through the example of the pure form of intestinal obstruction due to a f. ign body, is one which we are repeatedly meeting, but, as I have said, only a small minority are due to a definite swallowed foreign body. No more difficult task confronts the clinician than the diagnosis of an unknown acute abdominal lesion, and from a surgeon's point of view I do not feel satisfied in opening an abdomen unless I have a fairly good idea what the nature of the lesion will be. There are cases, however, of such a puzzling nature that only an exploratory operation can decide the diagnosis. The man who makes the fewest mistakes in diagnosis is deserving of the greatest praise, but the man who is always correct in his diagnosis of abdominal conditions has not yet been born. I do not pretend that my list of conditions resembling or simulating acute obstruction is exhaustive, and hope that some of you will add to the list I have attempted.

The conditions affecting the intestinal tract may be grouped under three heads:—

(1) Mechanical obstruction due to narrowing or blocking of the lumen.

(2) Strangulation obstruction, where there is interference with the blood supply to the bowel as well as blocking of the lumen.

(3) Dynamic obstruction, where the propelling force, *i.e.*, the normal peristalsis, is interfered with, which, when completely inhibited, produces a paralysis.

1. Mechanical Obstructions.

(*a*) *In the Lumen.*

(1) A definite foreign body. This is usually a bone which lodges in the small intestine. Very careful deep palpation of the abdomen generally leads to its discovery, but any doubt will be set at rest by an X-ray examination. History is often a great help in diagnosis.

(2) Fæcal impaction. A history of repeated efforts to defæcate with no success beyond the passage of a little blood and mucus will often lead to this condition being suspected, and as this is a very common cause of mechanical obstruction of the bowel it should be a rule in all cases of suspected obstruction to make a rectal examination. In cases which have reached the stage of acute obstruction, the concretion is often very large and almost stony and has probably been felt on abdominal palpation as a large elongated mass lying near the roof of the abdomen in the descending colon. If the mass is not pressed back to the rectum, bimanual examination, with the fore-finger of one hand in the rectum while the other

hand manipulates the abdomen, will usually bring the concretion within reach of the finger. Acute signs of obstruction may be delayed for many days after complete stoppage has developed; the reason for this I have already explained.

(3) Imperforate anus. Remember this condition in the newly born.

(*b*) *Outside the Lumen.*

Chronic inflamed mesenteric glands or metastatic tumours in these glands. Such may encroach upon or compress a loop of bowel and may form a distinct, firm, elastic swelling two or three inches in diameter, usually freely movable in the abdomen on palpation.

2. Strangulation Obstructions.

(1) Strangulated hernia. Examination of the position of external herniæ, inguinal, umbilical, and perineal regions, should be made for signs of any tense, painful, irreducible swelling.

(2) Intussusception. A very common cause of acute intestinal obstruction which should always be suspected in a young dog suddenly developing signs of acute obstruction. Hæmorrhage *per rectum* increases the suspicion. The palpation of a sausage-like mass of telescoped bowel, usually high in the abdomen, which has not the stony hardness of a fæcal concretion, clinches the diagnosis. Bimanual rectal examination also helps if there is doubt. As intussusceptions are most frequently near the ileo-cæcal valve, signs of an acute intestinal obstruction may be of the delayed type.

(3) Volvulus. I have never seen this occur in the dog.

3. Dynamic Obstructions.

(1) General peritonitis. Septic infection following accidental wounds or operative interference with the abdominal cavity, perforation of the stomach by a sharp foreign body, gun-shot wounds penetrating the bowel, rupture of the uterus in dystokia, perforation of a duodenal ulcer (I have only seen one such case), lead to a general peritonitis and this causes paralysis of the muscular coat of the intestine and rapid development of signs of acute intestinal obstruction.

(2) The so called "gastritis" group. It is well known that gastro-intestinal lesions form a very definite sign of specific fevers and in the dog distemper is no exception. Usually there are other signs in other systems of the body, especially the respiratory system, to keep us right; possibly there may be an epidemic in the district, and often careful enquiry into the history may elicit a gradual onset of the illness.

Then we have the gastro-intestinal case originating from toxins absorbed from septic foci elsewhere in the body, such as pyometra, bad septic wounds. Pyorrhœa is another source of infection of the gastro-intestinal tract. Food poisoning is a favourite means of accounting for bowel trouble. Uræmic poisoning due to chronic interstitial nephritis is, I think, a more common cause of bowel trouble than is realised and I wish to stress the importance of urine examination in all cases of gastro-intestinal lesions where diagnosis as to the exact cause is doubtful, as the finding of albumen gives the clue when the kidneys are the source of the trouble.

I quite admit that a large proportion of the foregoing cases recover early from the effects of temporary poisoning of the muscular coat, but many may pass into acute obstruction and show signs difficult to distinguish from mechanical obstruction. There are some which pass through a more chronic inflammation of the bowel, as in the uræmic poisoning type, which may, however, terminate in an acute way.

Pitfalls in Diagnosis for the Unwary.

1. Beware of mistaking chest conditions, pneumonia or pleurisy, for mechanical obstruction of the bowel and *vice-versa*, by examining the chest. Rapid breathing, vomiting, prostration and collapse may occur in both.

2. Do not mistake a kidney for a round foreign body when palpating the abdomen.

In conclusion, regarding diagnosis I would say, be satisfied that the causes of mechanical and strangulation obstruction are eliminated first of all. Examine the urine after this and so be assured that chronic interstitial nephritis is not the cause. After that you may use the term "gastritis" as a diagnosis and treat accordingly, but by careful examination it may be possible to be more certain as to the exact cause.

Diagnosis is largely a question of assessing the odds, and experience counts for much in this. We cannot reduce diagnosis to a guessing competition.

Treatment of Acute Intestinal Obstruction.

Fortunately in this paper I have only to deal with the treatment of a definite foreign body and if diagnosis is certain the plan of action is clear. For successful treatment a case should be dealt with before collapse and coma develop. If vomiting is already severe and approaching the fæcal type, the stomach should be washed out with warm soda bicarb. or normal saline solution until the return flow is clear. The advantage to be gained from the use of *B. welchii* antitoxic serum, in view of the experimental evidence of *B. welchii* playing an important rôle in the toxæmia of intestinal obstruction, appears to be worthy of a trial. The loss of tissue fluid can be replaced by normal saline given subcutaneously and body warmth maintained until one is ready to operate.

The operation of choice is enterotomy, but if the stage of devitalisation of the bowel wall is reached and gangrene threatened it will be necessary to resect a portion of bowel; there is not, however, much hope of a successful termination.

[1] Williams, B. W., "The Importance of Toxæmia due to Anærobic Organisms in Intestinal Obstruction and Peritonitis." *Brit. Jour. Surg.*, 1926-27, xiv, 295.

Discussion.

Opening the discussion, Mr. McKinna, jun., said first of all he would thank Professor Mitchell for coming to Yorkshire and giving them such an excellent paper. He had heard a great deal about Professor Mitchell's surgical skill, and was looking forward to witnessing the demonstration he would give later.

Happily, nowadays, one had not to apologise for introducing into a discussion a paper relating entirely to such a subject, as practitioners of the cities and towns had to

concentrate considerably on the study of the diseases of small animals, and the condition of a swallowed body in the dog called for a great deal of skill and judgment in its treatment. He would describe it as an accident type of case, and one which needed dealing with almost as an emergency case.

With the paper as a whole he was in almost complete agreement. In thinking of the subject he could not divorce from his mind the number of cases in which the foreign body lodged in the first part of the alimentary canal, which were the most frequent cases with which the practitioner had to deal. In examination it was necessary to have the animal perfectly under restraint, and if necessary morphia should be given as a preliminary step. Very good illumination with an electric torch was also a necessity. The use of tongue forceps was very valuable. The foreign body swallowed was usually a fragment of bone, or perhaps a needle. If a needle were swallowed it seldom got far, and it was usually recovered, possibly two or three weeks later, from an abscess in the region of the neck.

In diagnosis, he might emphasise the great importance of getting a very full history from the owner as to the nature of the foreign body swallowed, the time it was swallowed, and the symptoms soon afterwards. The owner was usually extraordinarily hazy about this, and the evidence had to be sifted carefully.

He would emphasise, also, the converse side of the picture, and that was the case of the foreign body which did not actually exist, which might be due to a kind of pharyngitis quite frequently seen in distemper.

The use of the x-ray in doubtful cases was excellent, but in practice one was always up against the additional expense, and other methods had to be relied on. The probang usually indicated the position of the obstruction fairly easily, and personally he had found it more easily used without a gag in the dog's mouth. A foreign body in the stomach or intestine could usually be located by palpation.

The discussion of the pathology of acute intestinal obstruction was very helpful and very illuminating. As regarded treatment, he would advise that nothing be done in a hurry. An examination should certainly be made straight away, but he would urge a waiting policy, which frequently resulted successfully. In the case of a foreign body in the stomach, where one's clients were hazy about the type and shape of the foreign body swallowed, he would be inclined to leave it there, and would deprecate the use of an emetic in those cases.

He was disappointed that Professor Mitchell had not given some description of the operations to which he referred in his paper, and he would like to be informed which method of anastomosis he favoured. Personally, he found end-to-end anastomosis extremely difficult. As to the results of operative procedure, in the cases where the foreign body was a rounded, non-sharp one, removal was fairly easy and results were good. In the case of the sharp, irregular body, there was considerable danger, and where such a body was embedded in the region of the thorax one's prospects of a successful issue were not good.

Concluding, Mr. McKinna thanked Professor Mitchell very much indeed for his very valuable contribution to their sum of knowledge of the subject.

Mr. ACKROYD ascribed the absence of alacrity on the part of the members to take part in the discussion to the fact that most of them had not sufficient practical experience of the various operations to offer effective criticism or any remarks of any kind about the paper. His own experience of the foreign body in the positions indicated in the paper lay in those cases which could be palpated in the cervical region—an operation which Professor Mitchell probably regarded as being in the kindergarten class. With regard to the foreign bodies in the stomach, his own conclusion as to the use of an emetic differed entirely from Mr. McKinna's. He had found this frequently to be successful in the case of a dog which had swallowed a coin. Apomorphine usually was very effective in such cases.

The PRESIDENT (Mr. SCOTT) said he had been impressed with the extraordinarily high order of Professor Mitchell's paper. The tale of the pathology of the abdomen was, to his mind, a revelation, in that they could visualise it in other animals besides the dog, and they could draw deductions which would give them useful information in horses and cattle. Most of the pathology they read was purely as to diseased organs and was not applied clinically, but they had been told something which was really of clinical use. One thing which had struck him was that Professor Mitchell had given no intimation as to the differential diagnosis between an abscess following, say, the swallowing of the needle and the case of a swollen cervical gland, and he instanced such a case which had caused him difficulty.

Mr. RABAGLIATI suggested that Professor Mitchell had omitted one point, which, however, did not apply in this country. In diagnosis there was the possibility that a dog showing signs of having a foreign body in the throat might be suffering from rabies. This was a condition he had found in Egypt.

Replying to the discussion, Professor MITCHELL said he had learnt quite a lot, and it had been worth his while coming to Leeds.

Dealing with Mr. McKinna's remarks, he could not see the point in using tongue forceps. They were commonly used in human beings to keep the tongue forward to prevent interference with the airway, but in animals they could get a very good examination of the pharynx without grasping the tongue with the forceps, with the possibility of injury.

He agreed it was important to get the history from the owner and he had tried to bring out that there were two types of cases they were likely to meet—one in which there was very definite suspicion or absolute proof, and the other in which there was no suspicion of the swallowing of a foreign body. In cases where there was a definite history of a foreign body they would be on their guard to look for it. It was in the other cases that there was most difficulty in diagnosis. Again, he agreed they got scares about foreign bodies where they did not exist, but they had often to make very careful examinations to eliminate the possibility of an extraction.

He did not agree with Mr. McKinna as to his waiting policy. To delay meant the loss of animals, particularly if the foreign body were in the thorax, because if they got the case within twenty-four hours there was not going to be much damage to the œsophagus, and, particularly in those cases where the foreign body was just within the thorax, it could be got away quite easily.

With regard to the method of anæsthesia he employed, he always gave morphia in conjunction with a general anæsthetic.

He did not advocate the use of an emetic in every case. In the case of a located foreign body such as a skewer or a sheep's rib, with which he had recently met, he thought it was risky, but where the foreign body had been swallowed easily then an emetic should be used.

Concerning operations, he proposed to give a demonstration later, and would then deal with various points raised. If they saved by operation one dog which would otherwise have died they were justified in operating; therefore they should always attempt to get away a foreign body in the æsophagus.

As to the President's remarks, he realised that in Leeds they had the greatest surgeon in the country (Sir Berkeley Moynihan), and it was he who had stressed so much the importance of understanding the pathology of the living. Pathology in the past had been often looked upon as a subject which had been kept in the laboratory, but Sir Berkeley had been going about the country for years advocating that pathologists and psychologists should go and see surgeons operating, so that they should see the pathology of the living. There was a lot to be learned in that way.

Dealing with Mr. Scott's point as to the differential diagnosis between abscesses formed by needles and swellings in the neck, he had overlooked this in his paper. An acute inflammatory swelling in the region of the neck would lead one to suspect first of all a foreign body as a possible cause, and in case of doubt an x-ray would show it readily.

He thanked Mr. Rabagliati for making the suggestions about rabies, which had never occurred to him, as he had yet to see his first case of rabies.

1. Observations on the Temperature Curve and Microscopical Examination of the Blood of Normal Calves.

2. Observations on the Temperature Reaction; the Microscopical Examination of the Blood, and the Blood changes produced in newly-born Calves reacting to Redwater.*

By J. Richard Hudson, B.Sc., M.R.C.V.S.

The following short observations were made at the instigation of the Chief Veterinary Research Officer during a brief stay at the Kabete Laboratory during May, 1927. It is regretted that, owing to the shortness of time, the results are not fuller; but it is hoped that another opportunity may occur to make further observations.

The subjects of the experiment were grade calves born at the laboratory farm and at the end of the experiment were all under seven weeks old. They were kept in pens with their mothers. All morning temperatures were taken before 8 a.m.

Erythrocyte counts were taken with Thoma-Zeiss hæmocytometer. The leucocyte determination was made by counting several hundreds of cells working up and down right to the edges of the slide. Monocytes congregate towards the edges of the slide, a fact for which I cannot offer an explanation. Slides for this determination were stained by Sabraze's Phenol Toluidine Blue method. (J. *Sabraze, Con. Rend. de la Soc. de Biologie*, Tom. 88. p. 700.)

Normal Calves.

These results were obtained from three calves inoculated with blood suspected of containing redwater and anaplasmosis, but which failed to give a temperature reaction or to show parasites in blood slides. As the calves could not have been immune, it is presumed that the blood at the time of inoculation was free from parasites.

The morning temperature of a very young, apparently healthy, Kenya grade calf appears to vary considerably between 98° and 103°F. Calf x1648 ranged between 99·6° and 103°, x1666 between 98·2° and 103°, and x1619 between 99° and 103·2°. The averages worked out at x1619, 101·3°; x1648, 101·5°; x1666, 100·4°; average for the three, 101·1°.

I am unable to trace the reason for the variation from morning to morning. In some cases the maximum and minimum occurred with only one day between.

Evening temperatures (about 4 p.m.) are of course unreliable and I only wish to draw attention to the fact that they are not necessarily higher than in the morning; usually they are. In one case a drop of 2·8° occurred and smaller drops are not uncommon.

The blood picture of these calves varied from day to day. Frequently no anæmic changes, such as are generally supposed to be normal to the blood of young animals, were discernible. Anisocytosis was the commonest departure from normal adult blood.

The anisocytosis was slight and mainly consisted in the presence of a few megalocytes. Microcytes were observed, but were uncommon. Poikilocytosis was observed very occasionally, but none of these calves showed either polychromasia or punctate basophilia. It is, however, to be noted that calf x1683 (which reacted to redwater) did show polychromasia and punctate basophilia before inoculation. In no case were true nucleated erythrocytes seen, though Jolly's bodies frequently appeared in smears.

It appears probable from recent work that a Jolly's body is an erythoblast with a very small nucleus (de Kock and Quinlan in 11th and 12th report of D.V.R. and E., South Africa).

Calf x1666 showed throughout what is easiest to describe as a "washy" appearance of the red corpuscles. They had not as strong an affinity for the acid part of Giemsa's stain as those of other calves whose blood has been examined.

With regard to the normal number of red cells, I regret that I can give no figures for these calves. A count was only kept in calf x1683. In this calf, before its reaction, the number varied considerably between nearly ten million and just over six million per cubic millimeter.

The same lack of figures is regretted in regard to leucocyte determination. It was noticed, however, that acidophile leucocytes were particularly rare and that monocytes were considerably more numerous than is usually stated in text books.

Redwater Calves.

Calf x1683 was inoculated on 2-5-27, and 3-5-27 with blood known to contain *Babesia bigemina* and anaplasmosis, the first inoculation being six days after birth.

At the time of inoculation the blood picture showed occasional polychromatic cells and punctate basophilia. On the second day after inoculation anisocytosis appeared and rapidly became more marked from day to day. Poikilocytosis appeared on the fifth day.

The first signs of *Babesia bigemina* were a few small trophozoites noticed on the sixth day. On the seventh day dividing pear-shaped forms were present and these increased in number on the eighth and ninth day.

After the appearance of the parasites in the blood, anæmia rapidly advanced, until on the eleventh day the blood crisis was reached. Erythroblasts were, however, only scanty. The next day the anæmia reached its height. Some of the polychromatic cells were then a bright blue in color. The maximum number of parasites was present on the tenth day, that is, the day before the blood crisis. About 15 per cent. of corpuscles were then invaded; from the tenth day they began to decrease in numbers until none could be discovered on the fifteenth.

Anæmia began to decline on the fourteenth day when the blood picture was much more normal. On the sixteenth day it only differed from that of normal calves by the presence of erythroblasts in very small numbers.

The blood crisis occurred simultaneously with a drop in the red cell content to 3·7 million per cubic m.m. On the same day the percentage of monocytes rose rapidly to 51 per cent. of the total leucocytes. The next day the number of red cells was slightly less, after that they gradually rose to normal figures. The monocytes fell back immediately after the crisis.

With regard to temperature, the rise began on the sixth day, the same as that on which parasites first appeared in the blood. The morning temperature never rose above 104·2°. In the case of another calf, x1617, the rise began on the same day after inoculation and in each case the maximum temperature was on the ninth. The maximum temperature of calf x1617 was 104·8°.

* Paper presented at a meeting of the Kenya Colony Veterinary Medical Association, held at the Kabete Research Laboratory, on 3rd January, 1928.

An interesting fact which, owing to my departure from Kabete, I was unable to follow in calf x1683, is the appearance of *Babesia bigemina* in blood after the first reaction is over. For some time they appear to go in waves.

On the seventeenth day after inoculation no parasites were seen. On the twentieth day there were still none and the blood picture was approaching normal. On the twenty-first day *Babesia bigemina* were fairly numerous. By the twenty-fourth day none were to be seen. On the twenty-sixth day a few were again observed and on the twenty-ninth day that were absent. This phenomenon requires further investigation, as it probably has some bearing on the anomalous results obtained in transmitting redwater by blood from a recovered animal.

In conclusion, I would like to thank Mr. Walker, the Chief Veterinary Research Officer, for the opportunity to make these observations, and also Professor Mettam for much valuable assistance that he gave me.

[We are in possession of copies of the temperature charts, the readings of which form the basis of Mr. Hudson's observations. Readers who desire to peruse them can obtain them on loan upon application to the Editor.]

R.C.V.S. Library.

The undermentioned additions have recently been made to the Library of the R.C.V.S.:—

- *Report of the Foot-and-Mouth Disease Commission of the United States Department of Agriculture, 1928.
- *"A Calendar of Livestock Parasites," M. C. Hall, 1928.
- *"The Regional Lymph Glands of Food Animals," Buckley and Castor, 1928.
- *Report of the M.R.C. on Borna Disease and Enzootic Encephalo-Myelitis of Sheep and Cattle, by Nicolau and Galloway, 1928.
- League of Nations Report of International Rabies Conference held at Geneva, 1927.
- "The Blood Plasma in Health and Disease," Pickering, 1928.
- "Recent Advances in Hæmatology," Piney, 1928.
- "Filterable Viruses," Rivers, 1928.

* Pamphlet.

Any of the above-mentioned works may be borrowed from the Library by members of the College on payment of postage both ways. Applications should be made to the Librarian, R.C.V.S., 10 Red Lion Square, London, W.C.1.

A Point of Law.

A curious point in procedure has arisen in the Lanarkshire Sheriff Court. The county council raised a case in its capacity as executive local authority under the Diseases of Animals Acts, the complaint being dismissed by the Sheriff on the ground that the Procurator-General alone had the right to institute proceedings. The Sheriff holds that, no express right being given to the county council by the Acts in question, none can be implied. It seems to have taken 30 years to make this discovery, which means that the county councils have not been very active. Perhaps the recent reforms in the duties of the Procurators have something to do with it.—*The Lancet.*

The Veterinary Record

8th December, 1928.

SWINE FEVER.

Elsewhere in this issue will be found an article upon certain aspects of swine fever which appear fundamental for its satisfactory control. The author seems to have devoted considerable attention to the subject and claims that certain practitioners, investigators and official veterinarians share some of his views. If this is so, then we think the paper should call forth a lively discussion, because the pig is of great interest to many in general practice, to many in laboratories, and to many veterinary officers of the Ministry of Agriculture and Fisheries and of local authorities.

Whilst we are not prepared to accept all that Mr. Pillers has to say, we feel that his contribution is timely, refreshing and stimulating. It should at least invoke the assistance of the experts of the Ministry in helping us to define swine fever, so that we may carry out our duties of notification to the satisfaction of our clients and to the fulfilment of the law. Great benefit would be derived from an official statement as to the method of diagnosis. This would clear up the confusion which has apparently been increasing during the last few years.

Official interference with stockowners is hardly ever resented when it is necessary, but when four out of five cases are not confirmed there would appear to be room for considerable research and consequent improvement. This, we take it, is what the writer of the paper is aiming at, and it is for this reason that we hope others will take up the cudgels for or against the views which Mr. Pillers has put forward.

TREATMENT BY EMPIRICISM.

For some time past advertisements and pamphlets have appeared emanating from the makers of patent medicines who urge the public to adopt their many "specifics" for the treatment of animal diseases. In these days of scientific enlightenment it would seem almost superfluous to stress the importance of diagnosis. Samuel Gee, whose aphorisms always repay re-reading, paraphrased Demosthenes by saying of medicine that the most important thing is diagnosis, the next most important—diagnosis, and the third most important—diagnosis.

XUM

With regard to the use of proprietary medicines, it is impossible to refrain from criticising the gullibility of the general public in this matter. That they should rely unreservedly upon the claims made in advertisements for these nostrums, claims which are often preposterous and sometimes ridiculous, is incredible.

On the other hand, there is no doubt that very many of these remedies are quite efficacious if applied against the disease for which they are indicated. But how is the layman to diagnose his animal's disease? Nothing in medicine is more difficult or more important than diagnosis, and when even veterinary surgeons of experience may find themselves at a loss to name some ailment, it is surprising with what intrepidity the novice sails in and settles the question without further ado. The greatest pity of all is that valuable pedigree animals should be so frequently dosed with unknown mixtures for unknown diseases, for lengthy periods at home, until often they become moribund. At this stage they are taken to a veterinary surgeon, who apparently is expected to wave a magic wand and effect a return to health.

The owner frequently openly admits that he has tried every conceivable treatment, but without success, and is forced at last to seek professional aid. This is grossly unfair to patient, owner, and surgeon alike, and cannot be too strongly deprecated.

The old adage that "A stitch in time saves nine" was never more true nor more appropriate than in the case of therapeutics.

CLINICAL AND CASE REPORTS.

Trismus or Tetany in a Mare; Inflation of the Udder.

By F. T. Harvey, F.R.C.V.S., St. Columb.

On July 23rd I saw a small polo type of mare with foal at foot. She had been on a moorland pasture, had strayed on the previous day, and when brought up was placed in a shed for the night. On the morning in question she was unable to feed, unsteady in her gait and excitable. Towards mid-day matters became worse and attendance was requested.

She was found in a critical condition and seemed likely to die before the udder could be inflated. There was intense trismus and severe spasm of all the muscles supplied by the seventh pair of nerves, the eyelids being quite closed, a spastic condition of the limbs, fibrillation of large groups of muscles and spasm of the diaphragm. The mare was lying on her side and when made to get up was quite unable to keep her balance and soon fell over. There was marked sweating, respirations 80 per minute and of a jerky character, pulse 80, very difficult to take, and the diaphragm contracting about 80, or synchronously with the heart beats. It was quite an acrobatic performance to inflate the udder. Calomel 13 was placed on the tongue and an enema containing chloral hydrate was given. Four hours later the mare was practically normal and she was not seen again.

Discussion.—The case was described at the Western Counties V.M.A. Meeting at Truro on July 31st. It occurred in the same area in which all my cases, with one exception, have been met with, and the animals are probably living on a low calcium phosphorous food content, which may predispose lactating mares, especially, to endocrine disturbances. The disease does not appear to be met with elsewhere in Cornwall, but since the earlier cases were published I have received reports from three young veterinary surgeons in different parts, who have met with isolated cases in mares, and in which inflation of the udder has been successful. It would appear that an occasional case may occur in any district, but that it is really an enzootic disease, and the symptoms are usually associated with a low blood calcium level. The symptoms are those of tetany, but tetany can hardly be regarded as a disease *per se*, since it is so frequently associated with other conditions such as rickets, cœliac disease, and spasm of the pylorus; in fact, with any condition in which there is defective absorption of calcium or phosphorous. Pyloric obstruction in infants is sometimes accompanied by gastric tetany with fatal convulsions. The convulsions sometimes seen in calves with pyloric obstruction may be of this nature. Tetany appears to be a syndrome determined by a disordered para-thyroid mechanism. In my cases in mares spasm of the diaphragm has frequently occurred and Williams of New York mentions this feature. He has described a number of cases with several fatalities (of course he did not then treat them by inflation—I believe I was the first to do so). In a case or two described in the *Veterinary Record* as fleeting tetanus protrusion of the nictitans has been mentioned among the symptoms. I have not seen it, neither has Williams, the eyelids being usually closed. Waves of fibrillation may be seen running across affected muscles.

Hypocalcæmia seems to be definitely associated with the occurrence of tetany, but the question still remains for answer:—What causes the disturbance in the endocrine system and notably that of the para-thyroids? "The para-thyroid hormone function appears to be to maintain the calcium of the blood at the normal level of 10 mg. per cent. and to balance the distribution of the calcium between the tissues and the blood "(1). It is said to be one of the most delicate of the vital mechanisms.

The Psychic Factor in Equine Tetany. It is not often in comparative medicine that one is able to invoke the psychic factor as determining morbid phenomena, but the cases we have been discussing seem definitely associated with psychological disturbances or enviromental changes. Thus, fasting, removal of the foal, œstrum, confinement in a dark box, or a railway journey, or other form of excitement, seem almost necessary to develop an attack. The etiology of tetany in mares appears thus to have a dual character, one psychological, and the other metabolic and associated with a low calcium potential.

Reference.

(1) Rickets and Allied Diseases. Ingleby Lecture, Dr. R. Leonard Parsons. *Lancet*, September 8th, 1928.

Trypanosomiasis in Indian Bulls.

By A. Joseph, G.B.V.C., Veterinary Inspector, Province Wellesley, Straits Settlements.

It has been stated that trypanosomiasis can only be detected microscopically when there is a rise in temperature, and the following cases may be interesting:—

Case No. 1. *10/5/28.*—The animal moved in a circular manner and fell down and died in an hour, before I reached the place. *Post-mortem* showed nothing abnormal. Blood smear showed trypanosomes.

Case No. 2. *14/5/28.*—A contact of Case No. 1. The smear from this bull showed trypanosomes. Temperature 103°. Slight watering from the eyes and hurried respirations noticed at the slightest exertion.

15/5/28.—Temperature 104°. Watering from the eyes and hurried respirations. Blood smear showed trypanosomes.

5/6/28.—Temperature normal. Hurried respirations and watering from the eyes. Trypanosomes in the smear.

11/6/28.—Temperature normal. Hurried respirations and watering from the eyes. No trypanosome in the smear.

12/6/28.—No temperature. Hurried respirations and watering from the eyes. No trypanosome in the smear.

8/10/28.—No temperature. No trypanosome in the smear.

Case No. 3. *5/6/28.*—Temperature 103° and slight watering from the eyes. Blood smear showed trypanosomes.

11/6/28.—No temperature. No watering from the eyes and no trypanosome in the smear.

19/8/28.—No temperature. No watering from the eyes. No trypanosome in the smear.

8/10/28.—No temperature. No watering from the eyes. No trypanosome.

Case No. 4. *9/6/28.*—The animal moved in a circular manner and fell down and died an hour or so before I reached the place. *Post-mortem,* nothing abnormal. Blood smear showed trypanosomes. Majority of the trypanosomes were disintegrated. The centrosomes and karyosomes were found separated from the flagella.

Case No. 5. *11/6/28.*—Temperature 103°. Blood smear showed trypanosomes.

19/8/28.—No temperature and no trypanosome in blood smear.

8/10/28.—No temperature and no trypanosome in the smear.

Case No. 6. *11/6/28.*—Temperature 103°. Blood smear showed trypanosomes.

19/8/28.—Temperature normal. No trypanosome in blood smear.

Case No. 7. *16/6/28.*—The animal moved in a circular manner, fell down and died in an hour. Blood smear showed trypanosomes.

Case No. 8. *19/8/28.*—The bull was yoked in a cart and worked for about a mile. When unyoked was found moving in a circular manner; then fell down and died. Blood smear showed trypanosmes. Five large echinococcus cysts were found in the spleen.

The affected animals were all contacts of Case No. 1. Trypanosomes were found in the blood smear, even when there was no rise of temperature. Thesy mptoms shown before death were described by the owners and I have not seen the same myself. Hurried respirations and watery discharge from eyes cannot be taken as symptoms of trypanosomiasis, as they are often seen in healthy animals. The affected animals kept their condition well and did not go "off feed" till just before death.

In Case No. 4 it was only after a minute search of the smear that I was able to find the trypanosomes, as a majority of them were degenerated, and centrosomes, karyosomes and flagellæ were separated. If I had not seen a few full trypanosomes in the whole slide I would not have diagnosed the condition as trypanosomiasis. The examinations were made at long intervals and many cases may have recovered.

Staining. Romanowsky (Leishmann's Modification) was employed as a stain and the best results were obtained after staining for half an hour.

Beautiful specimens can be obtained by this long staining method. I have used this method according to the suggestions given by Mr. H. G. Simpson, F.R.C.V.S., the Government Veterinary Surgeon.

Demonstration of Ankylostomum by Cultural Method.

By A. Joseph, G.B.V.C., Veterinary Inspector, Province Wellesley, Straits Settlements.

By the flotation method it is possible to detect ova in many cases. A small quantity of animal fæces is taken for the flotation method, but sometimes the ova may not be present in it. In a heavy infestation we may expect the ova in the major portion of the fæces.

In two cases (dogs) which came under my observation the ova were not found on flotation method, but by culture larvæ were found.

Two local bulls were emaciated and had foul smelling diarrhœa. Many ova were found on flotation and culture showed many larvæ. These two cases were of the type of a heavy infestation.

The method of culture is very simple and can be carried out with very little cost. The following method is adopted after seeing the culture of human fæces carried on by the Straits Settlements Rural Sanitation Bureau of Rockefeller Foundation:—

Method of Culture.

(1) From a suspected patient take about 2 to 4 ounces of fæces in a cigarette tin or any other vessel; mix with half or equal to its quantity of animal charcoal and moisten it with water.

(2) Keep it covered for 24 to 36 hours at room temperature.

(3) Take a glass funnel and fix inside it a wire gauze (60 meshes to an inch) and over the wire gauze keep lint of the same size.

(4) Fasten the lint and the wire gauze by attaching three or four "slide-on" paper clips around the border of the funnel.

(5) Attach a rubber tube about six inches long to the end of the glass funnel and keep it on a stand.

(6) Fix a metal clip to the lower end of the rubber tube.

(7) Put the cultured fæces inside the funnel and pour warm water (just as hot as the fingers can bear) slowly

between the lint and the wire gauze. Stir the culture gently.

(8) After one hour, release the metal clip attached to the lower end of rubber tube and collect the strained water from the funnel into a vessel.

(9) Take a few drops by a pipette and drop on a slide and examine under 2/3 lens. The larvæ can be seen wriggling about if any are present.

The curved portion of the larva shows a serrated appearance which may be due to the wrinkling of the sheath. The larvæ shed their sheaths and sometimes sheaths can be seen lying about in the strained water. At other times sheaths can be seen shedding from the bodies of the larvæ.

Mounting the Larvæ.

Keep for about half an hour a few drops of the strained water from the funnel containing the larvæ, on a glass slide, and when it nearly dries up, put a cover glass on it. Care must be taken that too much liquid is not used, otherwise the water spreads outside the coverglass and the larvæ naturally escape. After putting on the coverglass, examine again and see that the larva is inside and then mount. The cultures were done by me under the supervision of Mr. H. G. Simpson, F.R.C.V.S., the Government Veterinary Surgeon.

The proportion of mixture of fæces and charcoal made by the Rockefeller Foundation is, I understand, 1 to 4. Different proportions were tried by us for animals and it was found that the best results were got from a mixture of equal parts. Larvæ were demonstrated in cultured fæces that had been kept under culture for periods up to one month—at which time they were still alive.

REVIEW.

[The Diseases of the Bird, with special reference to Anatomy and Hygiene. By WILHELM OTTE, Veterinary Surgeon in Doblen (Lettland). Published by Richard Scholtz, Berlin. Second German edition, 1928. Price, 21 marks.]

A first Russian edition of this book was published in 1911. The second edition, appearing in 1928, is written in German, and as the author states in the preface he has taken the opportunity of making a thorough revision and of bringing the subject up to date.

The work does not deal with the domestic fowl alone, but also with other birds, such as the duck, turkey, goose, parrot and small cage birds. The text runs to 408 pages and comprises 82 pages on anatomy, 45 pages on hygiene, and 281 pages on the various diseases of birds. The value of the publication is greatly increased by 163 excellent illustrations, some of which are reproduced from other works. References to German, French, English and other literature on the subject are numerous and are conveniently arranged as headings to the various sub-sections.

In the section on anatomy the author gives a detailed and well illustrated description of the skeleton and of the soft structures of the body. The section on hygiene includes information on the construction of poultry houses, on foodstuffs and feeding and on such important matters as egg production, the use of incubators and the rearing of young birds.

In the first part of the section on avian pathology an account is given of the technique which should be adopted in making a clinical examination of the sick bird, and is followed by an outline of general methods of treatment and the use of anæsthetics. Instruction is given on the making of autopsies and on the examination of intestinal contents for worm parasites and their eggs. The author then treats in detail the various diseases caused by bacteria, protozoa and parasitic metazoa, such as lice, flies and worms. Here again may be mentioned the illustrations, which will be useful for purposes of identification. In connection with each disease information is given as to its etiology, symptoms, lesions, methods of spread, diagnosis and prevention. This section in particular will be of value both to the research worker and to other persons who wish to become acquainted with the usually accepted teaching.

Otte's treatise can be thoroughly recommended. Even readers whose knowledge of German is limited cannot fail to find the work useful. The printing is clear and the paper good. F. C. M.

ABSTRACTS.

[The Electrical Stunning of Animals for Slaughter. MULLER, MIX (1927). *Dtsch. Schlachth-Ztg.* 27. 20. 424-6].

Experiments were carried out in 1902 by Bockelmann and Hackenburg in Aachen, and in 1927 an experiment was tried on swine in Munich, using an alternating current. The result of this was that animals can be stunned, the heart still beating, thus permitting a *good* "*bleeding.*"

[The Diagnosis of the Early Stage of Udder Tuberculosis. (BONGERT, J. (1928) *Ztschr. f. Fleisch u. Milchhyg.* 38. 8. 133-136)].

There is big difference between the number of cows affected with tuberculosis of the udder, and the demonstration of bacilli in the milk. There is the possibility of diagnosing udder tuberculosis in the latent clinical stage by a histological examination of the cells of centrifuged milk deposit. An increase in lymphocytes is indicative of tuberculosis, whilst many polymorphs point to a non-tuberculous inflammation.

[The Demonstration of the Eggs of Parasites and of Parasites in the Domestic Animals. (SEDLMAYR, G. (1927). *Zeitschr. f. Vet-Kde.* 39. 12. 473-93. Abs. *B.T.W.* (1928). xxxxiv. 23. 388)].

Of the "enriching" fluids for demonstrating eggs in fæces, a saturated cane sugar solution is best. Good results can be obtained with glycerine. Saturated salt solution and water-glass mixture were much inferior. By the flotation method, the number of eggs increase after 20-90 minutes standing.

Steck's "enumerator plate method" is good in the quantitative demonstration of non-floatable eggs.

The fæces of 83 horses examined were all infected with strongyle eggs. Such eggs die quickly when horses' fæces are dried.

The intracutaneous injection of an alcoholic sclerostome extract produces a definite skin reaction in horses infested with sclerostomes.

DIVISIONAL REPORTS.

Yorkshire Division.*

N.V.M.A. PRESIDENT AT LEEDS.

A meeting of this Division was held at the Hotel Metropole, Leeds, on the afternoon of Friday, October 6th, 1928.

Apologies for non-attendance were received from Messrs. Pollock, Abson, Woodrow and Noel Pillers.

The minutes of the last meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct.

Nominations and Election of New Members.

Messrs. S. Sharp, Tadcaster ; A. D. Kerr, Huddersfield ; W. A. Ireland ; James Heard, Howden, and John Porter Cook, Market Weighton, were nominated for membership of the Division, and Mr. E. F. McCleery, of Leeds, was unanimously elected a member.

Treasurer's Report.

The Treasurer's Report was presented by Mr. MCCARMICK and was adopted, on the proposition of Mr. BOWES, seconded by Mr. SAMPSON.

It was put forward as a suggestion to the Council that a further sum of £50 be invested.

ELECTION OF OFFICERS.

The following were elected as officer bearers for the year 1928-1929 :—

President.—Mr. Scott. Proposed by the PRESIDENT)Mr. ACKROYD), seconded by Mr. RABAGLIATI.

Vice-Presidents.—Messrs. Ackroyd, Gaunt and Campbell.

Hon. Secretary.—Mr. T. C. Hall.

Auditors.—Messrs. Barber and Crawford.

Council.—Messrs. Bowes, Bowman, Clarkson, Ellison, McKinna (senior), Pollard, Rabagliati and Whitehead.

Election of Representatives on the Council of the N. V.M. A.—Messrs. McKinna (senior), and Clarkson.

On the motion of Mr. RABAGLIATI, seconded by Mr. SCOTT a hearty vote of thanks was accorded to the retiring President for his services during the term of office. Mr. ACKROYD suitably responded.

DR. BRADLEY'S AMBITION FOR THE N.V.M.A.

The PRESIDENT (Mr. Scott) said they were honoured that day in having with them the President of the National Association, Dr. Bradley. The last occasion on which they had had the President of the "National" with them was when Dr. Bradley came once before, so that it was not a thing which occurred each year, although they would very much like it to be an annual event for the President to visit the Society. (Applause.)

Dr. BRADLEY said he had not realised until that moment that it had become something of a habit for him to attend the meetings of the Society, but it was a habit one would like to cultivate and one which, he thought, his successors in the Chair should cultivate. It was an honour to him to be asked to attend, and he was pleased to have the opportunity of saying a word or two to the Yorkshire Society which had honoured him some years ago by making him a member.

Speaking of the National Association, Dr. Bradley said he had an ambition which could not possibly be fulfilled by his efforts alone. His ambition was that his year of office as President might be marked by a record accession to the membership of the parent Association. He could not be persuaded that in the geographical district covered by the various Divisions all veterinary surgeons in the areas were members of the Association, and he would like to feel that every effort was being made to bring in every possible veterinary surgeon.

That the Association was worthy of every effort to increase its membership had been abundantly shown during the last few years. (Applause.) No one who had not been in actual contact with the work of the Association could form the smallest conception of the tremendous increase in its activities, accompanied by a great stability of position. The work of the Association had grown tremendously, and though it would always have fresh work piled upon it, its shoulders were broad enough to bear the burden. It was to be hoped that those shoulders would increase in muscularity with the weight of the load that was imposed upon them.

He would also like to say that the power of the Association was much greater than it was not very many years ago. The word of the Association was taken in quarters that would astonish them if they knew, and the authority with which it spoke was greater than ever before. At the same time, he wished that authority to increase by an increase of strength, and it could only increase in strength by numerical increase. He therefore came back to the ambition of which he had spoken, that the membership of the Association should be bigger at the end of his term of office than when he took over the duties of the Chair. (Applause.)

Dr. Bradley concluded by expressing his appreciation of the privilege of being amongst them that afternoon.

A vote of thanks for his address was accorded to Dr. Bradley on the proposition of Mr. CLARKSON, seconded by Mr. ACKROYD.

Paper.

Professor MITCHELL, of Edinburgh, then read a paper on "The Signs, Diagnosis and Treatment of the Swallowed Foreign Body in the Dog."

[Professor Mitchell's paper, and a report of the ensuing discussion, are published earlier in this issue of the *Record*.—Ed.]

A hearty vote of thanks was accorded to Professor Mitchell for his paper, on the proposition of Mr. CLARKSON, seconded by Mr. ACKROYD.

Alteration of Rules.

The PRESIDENT said the Council had made certain recommendations for alterations of rules, which he thought would be acceptable.

Mr. CLARKSON read the proposed alterations, and explained their effect. He moved :—

> "That the alterations, additions and omissions of the present rules, as recommended by the Council, be accepted."

This was seconded by Mr. BOWES and carried unanimously.

A demonstration by Professor Mitchell followed.

T. C. HALL, *Hon. Secretary.*

* Received on 8th November.

British Columbia Veterinary Association.

(Affiliated with the National Veterinary Medical Association of Great Britain and Ireland).

"Coming of Age" Celebrated at Vancouver.

Every Veterinary Association throughout the Empire will unite with us in congratulating the flourishing Veterinary Association which exists in British Columbia on the attainment of its majority. Lieut.-Col. T. Dunlop Young, in forwarding the report of the proceedings which appears below, writes:—

"While passing through Canada I had the honour and pleasure of being entertained to luncheon by the British Columbia Veterinary Association in the hotel 'Vancouver' on September 15th, 1928, also attending their twenty-first Annual Meeting and taking part in a discussion which followed the reading of a paper on 'The Story of the Tubercle Bacillus.' I asked the Secretary to let me have a note of the proceedings. He has sent them to me and I forward them to you for publication in the *Record*.

"I was asked to convey to all members of the profession and especially all members of the National Veterinary Medical Association, the kind regards of the British Columbia Association.

"I wish to express my deep appreciation of the kindness shown to me by the members of the above Association while in Vancouver."

The report of the meeting is as follows:—

As a preliminary to the business session, a very fine and exhaustive paper on "The Story of the Tubercle Bacillus" was read by C. H. Vrooman, M.D.

Dr. Vrooman is a well known authority on the subject of tuberculosis and is in charge of the Rotary Clinic Hospital for Tuberculous Children at Vancouver, B.C.

Following this paper the regular business was conducted until noon, when the company adjourned for the banquet luncheon served in the Vancouver Hotel.

Dr. T. H. Jagger, the President, was supported by guests of honour in Dr. S. F. Tolmie, Premier of British Columbia, Colonel T. Dunlop Young, London, England, Dr. Vrooman, Vancouver, B.C., and Mr. Mitchell, of Kelowna, B.C.

Dr. Tolmie, Colonel Young and Dr. Vrooman all responded in kindly and well thought out remarks, especially stressing the evident co-operation of the medical and veterinary professions in British Columbia.

After luncheon, the business meeting was continued, and the following Council was elected for the next year:—T. H. Jagger, V.S., B.V.Sc., *President*; M. Sparrow, V.S., *Vice-President*; W. Graham Gillam, M.R.C.V.S., *Secretary-Registrar*; J. G. Jervis, V.S., B.V.Sc.; T. R. R. Hoggan, M.R.C.V.S.; G. Howell, V.S., and R. G. Cuthbert, V.S., B.V.Sc.

T. H. Jagger, *Acting Secretary.*

New Zealand Veterinary Association.

(Affiliated with the National Veterinary Medical Association of Great Britain and Ireland.)

Annual General Meeting.

The Annual General Meeting of the New Zealand Veterinary Association (Incorp.) was held in Wellington on 18th, 19th, 20th July, 1928. Thirty-five of the forty-one members on the roll were in attendance. General business and election of office-bearers were put through with as much despatch as possible, in order to discuss the numerous papers presented by members.

Election of Officers.

The following office bearers were elected:—

President: Dr. C. J. Reakes, D.V.Sc., M.R.C.V.S.
Vice President: A. M. Brodie, M.R.C.V.S.
Council: Messrs. J. Lyons, J. Kerrigan, H. S. S. Kyle, M.P.
Librarian: D. A. Gill, M.R.C.V.S., D.V.S.M.
Hon. Secretary and Treasurer: C. S. M. Hopkirk, B.V.Sc. (Melb.).

On the 19th, members met at a very pleasant luncheon, to which they had invited as guests the Minister of Agriculture, the Director-General of Health, the Director-General of the Military Forces, and the Chairman of the Stock Committee of the House of Representatives. The principal speaker was the Minister of Agriculture, who stressed the importance of the veterinary profession in New Zealand in dealing with meat for export, quarantine regulations in imported stock, milk supplies in cities, and the investigation, treatment, and prevention of diseases of livestock. He also hinted at the possibility that at some future date it might be advisable to subsidise private practitioners in the less richly populated districts, so relieving the Government veterinarian from duties which he must at present undertake because of the absence of private practitioners, and in order to encourage private practitioners to set up practice in the country.

The papers in the majority of cases provided splendid discussions.

Mr. C. V. Dayus, M.R.C.V.S., spoke on the condition of dairy cows known, for want of a better term, as bovine eclampsia. He stated that in his district, the Waikato—a thickly-populated dairying district top-dressed heavily with superphosphate—700 cows at least had died during the past spring. Deaths occurred in the vicinity of a fortnight after calving. Certain rich farms had lost a number in the herd, while other cases occurred singly. Symptoms were nervous in character with sudden tetanic convulsions, and frequently deaths occurred at milking or just after. Mr. Dayus discussed the theory of calcium deficiency and the action on the parathyroids, the deficiency resulting, in his opinion, from the overuse of superphosphate and the too little use of lime on the pastures.

The finding of blood calcium and phosphate was at present being attempted. Treatment had so far not been successful, except where the animal was at once given chloral hydrate or morphine. The author was attempting treatment with ca. chloride intravenously. The paper

was well reasoned and convincing, and paved the way for experimental work on the condition.

Mr. W. C. Barry, M.R.C.V.S., read a paper on "Pasteurellosis," with the express object of bringing to the notice of members the increase of this disease in pigs in the North Island of New Zealand. He stressed the fact that, whereas in Great Britain it was not looked upon as a disease of great importance in itself, in New Zealand, where swine fever was entirely absent, it caused a serious loss amongst recently-weaned pigs.

Mr. C. S. M. Hopkirk, B.V.Sc., in speaking on this paper, mentioned the prevalence of an otitis media of pigs very often present in the same herds as those affected with pasteurellosis and due to *B. pyogenes suis*. He considered this in many cases to be an aftermath of pasteurellosis.

Mr. A. L. Thompson, M.R.C.V.S., then read a paper "Meat Inspection," dealing with standardisation of the system amongst inspectors, anomalies in the regulations, and necessary alterations. This paper was followed by a prolonged discussion, in which the question of young five-day-old calves received a great deal of attention.

Mr. D. A. Gill, M.R.C.V.S., D.V.S.M., brought forward a paper dealing with his research work in connection with mortality of fat lambs between the ages of three to six weeks. This mortality is common in areas rich in phosphates or where top-dressing has been heavily carried out. Mr. Gill's paper, with that of Mr. Dayus, were the outstanding papers of the meeting, both having expressed theories well reasoned out and with possibilities. Mr. Gill told of his work in connection with bacterial invasion of the small intestine, particularly with *B. welchii*, and the possibilities of upset of metabolism and production of toxins from the increased food supply. Calcium deficiency with accompanying tetanic convulsions, as seen in bovine eclampsia, appeared also to be a possibility in the case of the lamb mortality.

Mr. P. Haugh, M.R.C.V.S., gave a short paper on cases of stringhalt observed in horses in his district, also cases of rye-grass staggers in cattle and sheep. As the nervous symptoms in stock had been prevalent in the North Island in stock during the past autumn, members discussed the bearing of ergotism and of calcium deficiency on the symptoms. Experimental work on the condition was being carried out at the Veterinary Laboratory, Wallaceville, as soon as fresh ergot could be procured.

Mr. J. G. McIlwaine, M.R.C.V.S., gave a paper "The Feeding of the Dairy Cow." This was particularly appropriate, on account of the recent appointment by the Agricultural Department of four of its veterinarians to act as animal husbandrymen. The question arose, during discussion, of the possibility of decrease in bovine tuberculosis if better feeding were carried out in dairy herds.

Mr. W. M. Webster, M.R.C.V.S., B.Sc., contributed to the meeting the results of the feeding experiments with various minerals and concentrated food, with a view to decreasing sterility in dairy cows. Sterility was not decreased, but his graph showed the increase in milk and butter fat which more than paid for the labour and material.

Mr. A. M. Brodie gave the meeting the results of his experience with intracerebral inoculation of anti-tetanus

(*Continued at foot of next column*).

A Survey of Humane Methods of Destruction, including the Use of the Lethal Box for Small Animals.

Professor Hobday's "Benjamin Ward Richardson Memorial" Lecture.

The Lecture Theatre at the Royal Veterinary College, Camden Town, was well filled with an audience which included a large number of senior students on the occasion of the delivery by the Principal, Professor F. T. G. Hobday, of the Seventh Annual "Benjamin Ward Richardson Memorial" Lecture, given under the auspices of the Model Abattoir Society, on the evening of Thursday, November 22nd, 1928.

The lecture, the title of which is given above, was illustrated by a large number of epidiascope views of methods of slaughter in operation, while specimens of the lethal appliances to which reference was made in the lecture were available for inspection.

The President of the Model Abattoir Society, Sir James Crichton-Browne, was supported by Sir William Collins, who delivered the first lecture of the series, Major-General Sir John Moore, and the Rev. George Martin (Hon. Secretary).

The President, in introducing Professor Hobday, said that these annual lectures were intended to keep green the memory of a very highly-gifted and distinguished man, but the Richardson Memorial Lecture was, on that occasion, more than a memorial lecture,—it was really a centenary celebration, for 100 years ago on the last day of last month Sir Benjamin Ward Richardson was born. Throughout his life Richardson had shown the light to all who desired to see humanitarian principles adopted in the dealings of mankind with the lower creation, and he was the designer of many humane appliances. There could be very few now living who could remember as he (the Chairman) could, the charming personality, the stirring eloquence, of Sir Benjamin Ward Richardson, but apart altogether from individual reminiscences, he had left an enduring mark upon his time. His signal services to medical science, to hygiene, and to philanthropy had been ably and sympathetically recorded by Sir William Collins, who was there that evening—(Applause),—in the first lecture of the memorial series. It was unnecessary, however, that he should recount to them Sir Benjamin Ward Richardson's public services of that kind, but he might just call their special attention to the part he played in the founding of that Model Abattoir Society. His great aim was the abolition of the private slaughterhouse, and the substitution for it of the municipally-owned slaughterhouse; also the adoption of humane methods of slaughter, and of the considerate treatment of animals preparatory to slaughter, while he was further greatly concerned with the improvement of methods of meat inspection. (Applause.)

Some advances had been made since Richardson's time, but there was still much to do, and that Society was carrying on his great work. It was doing so that evening in intro-

(*Continued from previous column.*)

serum in cases of tetanus in horses. He had had marked beneficial results.

A meeting was held, following the general meeting, of Government members of the Association, who discussed with Dr. C. J. Reakes, Director-General of Agriculture, the possibilities of an increase in salaries of veterinary officers. The minimum of £445 was considered too low a standard, and a suggestion made that £515 should be offered, the maximum advancing to £615 per annum. Dr. Reakes promised to meet the Public Service Commissioner with a delegation from the Government members to put the views of the veterinarians before that officer.

C. S. M. Hopkirk, *Hon. Secretary.*

ducing to them, as their lecturer, Professor Hobday. The Society deemed themselves to be particularly fortunate in securing the services of Professor Hobday in that capacity, for he was one of the leading authorities in comparative pathology, which was becoming of great and ever-increasing importance, and he had more and more recognised that the diseases of human beings and animals threw a vivid light upon each other, and must be considered together.

He felt sure that Professor Hobday would add another admirable chapter to that series of valuable lectures which the Model Abattoir Society had been proud to produce. (Applause.)

In the course of his lecture, Professor HOBDAY said that Sir Benjamin Ward Richardson's career as a medical scientist was a brilliant one, and that it was on account of an incident in a slaughterhouse, when engaged on a research into the coagulation of the blood (for which he was awarded the Astley Cooper prize of £300) that he first came into practical contact with the methods of slaughter of cattle, and set his brain to work to devise methods which he considered to be humane towards the beasts who had to be destroyed for food purposes.

That was the seventh occasion on which those memorial lectures have been given, and each of his distinguished predecessors had recognised the urgent necessity for reform in the way of the universal providing of public abattoirs, not altogether on grounds of economy and for the protection of the health of the public, but also on the grounds of humanity to the food animals themselves. He, too, recognised this, and should go into the matter in some detail, but he was also going to put in a plea for the more humane destruction of the smaller animals, especially in regard to the indiscriminate use of the lethal box.

When in one animal rescue home in London alone the number of stray dogs and cats destroyed averaged over 50,000 per annum, one got an appalling idea of the necessity that those who took part in that destruction should be properly trained, so that they might, at any rate, know that there was a right and a wrong way by which to "lethal" a dog, or a cat, and moreover, the wrong way might be a very cruel one—one, indeed, which was inhumane.

In making a survey of the humane methods of destruction one must take into consideration the conditions under which the animal was placed, and here, like his predecessors, when dealing with the animals destroyed for food, he supported public abattoirs as opposed to the private slaughterhouse system. In England we still lagged behind our Continental neighbours. Even our Colonies were ahead of us, and it seemed incredible that in this era of civilisation the existence should be necessary of a Model Abattoir Society, whose objects included three paragraphs which particularly concerned his address that evening, *viz* :—

First, to induce the public to insist upon the erection of public abattoirs, so that the private slaughterhouses may be, as far as possible, abolished.

Secondly, to demonstrate the healthiest, the most convenient, the most humane, and from all practical points of view, the best, lairage accommodation for animals that are waiting to be slaughtered.

Thirdly, to secure and teach the most rapid, skilled, and humane methods of slaughtering all kinds of animals intended for human food.

Considerable progress had been made in respect to the above since 1866, the year in which the Model Abattoir Society came into being, but much remained to be done, as at the present time in England there were only 83 public abattoirs, whilst there were thousands of private slaughterhouses. It was unnecessary to enumerate, on that occasion, the advantages to the general public of a well-built, well-designed, public abattoir, controlled by an efficient and experienced staff, with properly qualified meat inspectors and other officials, but it was appropriate to emphasise the value to the animal from the humane point of view, as not only was the slaughtering carried out by trained men, but it was done under the eyes of skilled supervisors.

Letchworth was a model pattern, but very small when compared with the large abattoirs on the Continent, etc.

The lecturer now passed to a survey of the various actual methods of destruction in daily use. By the kindness of certain well wishers to the cause, especially the R.S.P.C.A., Messrs. Greener, and Messrs. Douglas & Sons, he was able to show them patterns of the actual instruments, in addition to which he had numerous photographs and diagrams to illustrate by the aid of the epidiascope.

The instruments were mainly of two patterns: those which necessitated the use of a bullet; and those which stunned by the aid of a captive bolt.

Amongst the first was that which was known in England as the Greener Cattle Killer, the original idea of which, he believed he was correct in stating, was worked out by Dr. Seigmund, the Veterinary Director of the Abattoir of Basle, in Switzerland, from 1870 to 1909.

For several years he experimented with various patterns of shooting apparatus, and it was to his credit that he refused to patent any of them "because he did not want to hinder the perfecting of the apparatus." About ten years later Colonel Hakel, of Zurich, the owner of an ammunition factory, added a great improvement to the working of the apparatus, in the form of a silencer, which considerably added to the furtherance of its use, and those who had seen a large abattoir at work could appreciate the great advantage which a comparatively noiseless killing instrument had over one the use of which was accompanied by a loud report, such as that of an ordinary gun.

It was this pioneer effort of Dr. Seigmund from which had resulted the numerous and excellent instruments for the humane slaughtering of animals which were in vogue at the present day, and of which he had a selection to show them that afternoon.

The "Stoff" pistol, made at Erfurt in Germany, and the "Formator," better known as the Swedish Killer, were on the same principle, and the R.S.P.C.A. Killer, consisting of a pistol placed at right angles on the end of a long wooden shaft, was a further improvement where an animal was concerned which was wild and dangerous to approach.

Members of the veterinary profession were proud to be able to acknowledge that that great work, of so much value to the cause of humanity towards animals, was pioneered by a veterinary surgeon. (Applause.)

It soon became obvious that if used carelessly, there were liabilities to accident when a flying bullet was in operation, and ingenious inventors brought out instruments which ejected a captive bolt of sufficient length to penetrate the brain with enough force to cause a stunning which would last for a sufficiency of time to enable the slaughterman to cut the throat before consciousness returned. Of these, the "Cash" pattern of pistol in England, and the "Behr" model on the Continent, had received well-deserved recognition, the chief objections which were raised against them being that in each case they needed to be kept clean and in proper condition. In England one mainly heard those objections raised by the proprietors of the smaller private slaughterhouses, as the trained abattoir assistant accepted that necessary accompaniment as part of his duty, and in the well conducted Continental abattoirs, where he had made many enquiries, he had never heard that raised as a serious complaint.

Having dealt with methods in use for controlling the ox and pig, the lecturer proceeded to say that the expediency of stunning pigs before cutting the throat had been the subject of much controversy, as the proprietors of large bacon-curing factories, and indeed many of those who killed pigs for sale as fresh pork, refused to adopt that method as they asserted that the result was a considerable proportion of "splashed" carcases. Personally, he would prefer to see all pigs stunned to insensibility, but as a practical man, he felt that they had to recognise that pigs were killed for food purposes only, and if by certain methods of killing the flesh was not produced as first-class food, that method of killing was sure to have its opponents. One could not but recognise, too, that amongst those opponents there were men whose attitude to animals was equally humane as one's own. What one wondered was why, if Holland and

certain other countries could carry out a law (as they did) universally on the pigs as well as all the other food animals, —a law stating that " the animals must be stunned to insensibility before the knife is used on the throat "— without serious opposition on the part of the bacon-curing factories and the general public who ate pork, England cannot do it too, and thus get over the biggest blot on our present slaughtering system in this country. (Applause.) It was a blot, and a big blot, too, that any animal, even if only a pig, should suffer even only a minute of excruciating pain (and it must be terrible pain to a fat, heavy pig, to be hung up by one or both hind legs) which was avoidable. That thirty of forty seconds seemed an interminable time to an onlooker. The " wheel and the squeal," as it was called in Chicago, was a sight one did not want to see twice.

The pole axe had been the principal instrument used from time immemorial, and in the hands of skilled experts, if the first blow was effectual, there was no doubt that death was swift and merciful. Human skill, however, might sometimes err, and there was much more chance of error in precision as to the exact spot on which the blow fell, and of variation in the amount of force behind it, when the pole axe was used than when the humane killer was the instrument of death.

The Jewish method of killing by cutting the throat without previous stunning, although unpleasant to watch, had no great objection in so far as the actual cutting operation was concerned, for it was generally conceded that unconsciousness supervened as soon as the arteries of the brain are emptied, and that took place in about ten seconds, but there was much room for improvement in the manner of securing the body into position, so that the head was extended to the neck sufficiently taut. A big, lusty, animal would often put up a strenuous fight, displaying signs of extreme terror, during the process of casting and securing. In order to obviate this, several machines had been invented, the latest being that of Mr. Weinberg, (a Jew himself) of Leeds.

The animal was driven (or walked) into the machine, which had rounded sides like a large barrel, and by means of a lever the whole thing turned over, so that the head was extended forward. This was then held in position whilst the Shochet used the knife.

Its prospects were excellent, if only they could get it inserted into all abattoirs and slaughterhouses where Jewish slaughtering was done, and it was most unfortunate that, when, a few months ago, a Committee of official veterinary inspectors belonging to the biggest abattoirs in Great Britain met together for the express purpose of deciding as to its merits and fitness for immediate trial, the brakes of the machine did not act properly, and the trial had to be abandoned. This defect had, he understood, now been remedied, and he had recently had a report to say that it was now working satisfactorily and on its further trial in an abattoir at Leeds.

For the killing of horses there was no more efficient instrument than the " Humane Killer."

Pithing, by which was indicated the severing of the spinal cord through the space which exists behind the head, between the first and second vertebræ, was a common method of destruction used in some countries. In skilled hands, if efficiently used, its sequel was speedy, but even with a so-called expert slaughterman he had seen it fail at the first blow.

In some of the large Colonial and South American abattoirs cattle pithing was carried out by means of a large spear-headed instrument worked from a platform over the animal, and he was given to understand that the expert slaughterman rarely failed to sever the spinal cord at the first stab.

One could not too much emphasise, from the humane slaughtering point of view, the necessity that those who actually did the killing should be thoroughly trained and healthy men. In most Continental abattoirs it was necessary for these men to hold a certificate of having passed successfully through a course of training, and that entitled them to occupy a very trustworthy position as head slaughterman. We in England were again behind in this respect, and it would be to our benefit to have such a law made compulsory and universal here and not to permit killing ever to be done by inexperienced persons. Clause 12 of the Model Bye-Laws issued by the Ministry of Health with regard to the conduct of slaughterhouses provided for this, but these Bye-Laws were permitted to be adopted voluntarily, not compulsorily in England. A new Bill, however, which would come into force for Scotland, in January, 1929, contained a clause whereby slaughtermen must take out a license in the particular district in which they were operating. (Applause.)

Appliances had been devised for providing the necessary training in strength and accuracy of aim.

During the past twelve months a considerable amount of trial had been given to the use of electricity for the stunning of animals, and if the result upon the flesh was not in any way objectionable that seemed to be a way of dealing with the matter of which more would be heard.

It was stated that the meat of animals killed in this way bore comparison in every way with that of animals killed by other means, but it was too early yet to offer an opinion as to whether that method would ever come into universal use, and one could only await further reports from experts who had it under observation.

The Painless Destruction of the Smaller Animals.

The fact that one small animal home alone destroyed an average of over 50,000 stray dogs and cats annually gave one some idea of the vast numbers of the smaller animals which were brought for destruction to the ever-increasing and numerous animal homes throughout Great Britain. This centre (the Animal Rescue League) was under the supervision of the R.S.P.C.A., and was fitted with specially-constructed electrocution apparatuses for the dog and cat respectively.

The box for the dog resembled, when closed, the cover of a roll top desk, the animal standing on a platform under a flexible wooden shutter which, when completely closed, formed the contact with the current. Cats were put into a kind of drawer, very much like that of an ordinary table. The bottom was of metal and contact was established immediately the drawer closed. Death in each case was instantaneous. The bodies were left inside for about a minute before removal, and this was found to be sufficient.

Similar electrocuting plant had now been inserted in eight other stray dog or cat homes in various parts of Great Britain, and there was no doubt that this method was one of the best for speedy and painless destruction where large numbers of animals had to be dealt with.

The Safeti Killer was a very handy and useful instrument for the veterinary surgeon to have at hand, and useful also for Police Stations and Dogs' Homes, where the animals were not necessarily destroyed in the presence of the owners, who naturally objected to the sight of blood. A painless end, but not pleasant to look upon. The shot gun had the same objection. For this reason the veterinary surgeon preferred the use of morphia and chloroform, or the lethal chamber, or he could apply the intravenous injection of magnesium chloride or magnesium nitrate, or the use of hydrocyanic acid, strychnine, or chloroform direct into the heart, or some such agents. It was, however, to the untrained use of the lethal box that he would draw special attention, for whether the lethal agent was chloroform or coal gas the death produced could be made a very cruel and suffocating one if the agent was given irrationally. For the method to be humane the animal should either be placed suddenly into a chamber previously filled with the lethal gas, such as was done in the case of the large lethal chamber at certain dogs' homes here and abroad ; or the lethal gas should be added gradually to the air when the patient was inside, slowly, and in gradually increasing quantity. Unconsciousness in the former case was swift, and in the latter slow, and not noticeable. Each was a painless end.

To administer slowly either chloroform vapour, or coal gas, required training and experience, and the officials of free dispensaries for animals of the poor and of homes for

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stray dogs and cats should arrange for those who had to do the lethalling to be trained in correct methods. To put a large and indiscriminate quantity of chloroform on a piece of cotton wool and introduce this into the box, without any knowledge of the proper proportion of air to allow, meant suffocation, and a period of struggling which indicated something more than discomfort.

In conclusion, Prof. Hobday expressed the hope that his survey of humane methods of destruction would have set them thinking about the duty which man owed to the animals over whose lives he held the power of life and death, and how it behoved humanity to do their utmost to assist them in their helplessness to assist themselves—a worthy aim, which was so earnestly championed by Sir Benjamin Ward Richardson during his life, and which was being so keenly pursued by those who were to-day following in his footsteps in supporting the work of the Model Abattoir Society.

Animal Diseases Research Institute, Moredun.

Mr. Pool's Account of its Work.

Mr. W. A. Pool, M.R.C.V.S., Director of the Animal Diseases Research Institute at Moredun, Edinburgh, recently delivered the opening address to the Kelso and District Agricultural Discussion Society in the Roxburghe Hall, Kelso. Speaking on the work of the Association, Mr. Pool said its function was to investigate diseases which are still obscure. It was supposed to deal with work which ordinarily lay within the sphere of the practising veterinary surgeon. Actually, there was a great deal of collaboration with practising veterinary surgeons, when the services of a pthologist or laboratory methods were required for dealing with difficult questions, diagnosis, preparation of vaccines, etc.

As announced recently, an anonymous donor had given £10,000 to the association to be spent on expansion of the research staff. It was hoped that, as the result of the grant of funds from other sources consequent upon this generous gift, it would be possible in the very near future to recruit more investigators. The scope of work could then be widened, and other problems could be taken up which had hitherto reluctantly been set aside. It was a sign of the times that all research institutes were very anxious to know what other ones were doing, and to co-ordinate the work, in order that the results of each would advance the knowledge of the subjects studied by others. The importance of nutrition upon health, and therefore upon resistance to disease, was manifest. Similarly, if susceptibility to disease was inherited, this factor must be recognised and dealt with in the course of eradicating or minimising disease in their live stock. The Rowett Research Institute, Aberdeen, and the Animal Breeding Research Department, Edinburgh University, had much in common with their Association, and they were looking forward to extensive collaboration in the future.

Mr. Pool proceeded to deal with some of the diseases under investigation. In passing, he expressed the view that the germ theory could reasonably be applied to "scrapie," and that there was justification for devoting time to a search for such a germ in the course of attempting to find the manner in which the disease maintained itself.

After a reference to the particular line of work the Association proposed to take up in the investigation of "louping ill," Mr. Pool said they had now been preparing braxy vaccine for several years, and the amount demanded increased rapidly each year. This year 60,000 doses had been issued. They were hoping to make a further study of "braxy," and the diseases which simulate it this winter, because he felt that much more could and should be done. They were anxious to obtain all the information they could about diseases of this type. Their motor laboratory would be available for this investigation during the coming winter.

They had been investigating "lamb dysentery" for the last seven or eight years, and now felt that as a result of the work carried out they could say that they understood the cause and the method by which it could be eliminated. They claimed to know very intimately the manner in which the disease had behaved on a good many farms. In the past it had been spoken of as the mysterious lamb disease. There was nothing mysterious about it. He believed that the spread of "lamb dysentery" was controlled by phases which the causal agent passed through. In the middle of the lambing season on an infected farm the germs were highly virulent. They were able to infect new-born lambs with great certainty. Usually this state of affairs continued to the end of the lambing season. After the last lamb was a fortnight old, the germs were unable to get access to, what was, for them, a comfortable situation, the bowels of a new-born lamb. In consequence, they began to find that life was rather a hard fight, and underwent a degree of starvation. They were, however, able to hang on, and until the next lambing season came round their lives from their own point of view were uninteresting and precarious. In the interval they lived on in soil, and probably to some extent in the bowels and on the skins and coverings of animals running over that ground. When the next lambing season came round, the first lambs picked up the germs; but they were very puny, weak germs, and only ghosts of their former selves. With access to the tissues of new-born lambs, however, they took a new lease of life and began to grow stronger. By the time they had achieved their new strength their first host had grown out of the age of susceptibility to the disease. These first lambs passed the rejuvenated germs out on to the ground, and they were picked up by the later lambs. By this time the germs were able to take care of themselves and to cause the disease when they obtained entry to new-born lambs. That, he considerd, was a reasonable account of the life history of the "lamb dysentery" germ. During the time of the year when there were lambs on the ground under a fortnight old infection was fairly easily spread to farms on which there were other new-born lambs. Any agent could carry the germ that carried dirt. By the time the big movements in sheep stock took place there had been an interval of several weeks since lambs of a susceptible age existed. During that interval the germ had lost virulence. It did not appear to be transported by adult sheep stock to any great extent in the ordinary course of marketing.

"Lamb dysentery" should be controlled by carrying out active operations to prevent further infection of the land, and, at the same time, immunising the lambs. The great source of infection was the dung of affected lambs. Obviously affected lambs should be killed and buried. The ground in the close vicinity should be scraped and buried in the same pit. Shepherds should not handle healthy young lambs after touching infected ones. The less traffic there was between affected and clean ground the better, the movements of all forms of life being regarded as traffic. The Association had worked at the production of serum for immunising the lambs, and was now preparing one for use next spring. The lambs had to be inoculated soon after birth so that protection might be conferred before the infection had made headway. Trials on infected farms had shown that it was quite a practicable way of dealing with the disease, and the results had been excellent.

"Grass disease" was still one of their unsolved problems, but they were concentrating all their energies on to it. The scope of the investigation had been widened to the utmost during the last year, and representatives of several of the allied sciences were actively collaborating with them. So far, all attempts to reproduce the disease had met with failure. If it were directly contagious from case to case, it was nearly certain that one or other of the methods by which they had attempted to set up an artificial attack would have met with success. Botanists had helped to search for poisonous plants. Many "grass disease" pastures had been very completely surveyed but the flora did not differ from that of similar pastures in parts of the country in which the disease was unknown. Many feeding experiments had been carried out with different varieties of plants from "grass disease" pastures to ascertain if apparently innocuous ones possessed virulence. In all cases the horses so treated had remained healthy. They had news of about 800 cases this year.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Dec. 10th—Meeting of the Editorial Committee N.V.M.A., 10 Gray's Inn Square, W.C.1, at 4-30 p.m.

R.C.V.S. Obituary.

CATON, Horatio William, 413 Mile End Road, E.3. Graduated, London, 20th April, 1868. Fellowship, 30th October, 1891. Died, 27th November, 1928, aged 81.

The death of Mr. Caton at the great age of 81 removes a venerable figure who was until five years ago prominent in cart horse practice in the East End of London. Practising, after graduation, in the Ongar and Romford districts, Mr. Caton came to Mile End in 1880, retiring after forty years' work there. Mrs. Caton and one daughter survive him. Mr. Caton was interred at Stondon, Essex (his birthplace) on Saturday last, when those present included the following members of his profession:—Col. A. Smith (son-in-law), Mr. E. J. Catmull, Mr. J. F. Macdonald, Mr. W. Shaw and Mr. D. E. Wilkinson.

Personal.

Appointment.—Major J. A. Dixon, T.D., M.R.C.V.S., Chief Veterinary Officer, Public Health Department, Leeds, has been appointed Chief Inspector and Veterinary Inspector under the Diseases of Animals Acts for the City.

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Will.—COWDREY, Mr. James, of Bankside, Lingfield, veterinary surgeon, who was born and died in the same house, having lived there for 81 years, £925.

In Parliament.

That "no horse or other animal shall be worked for more than eight hours in any twenty-four hours, except in cases of emergency" is one of the provisions of the Coal Mines (Protection of Animals) Bill, the text of which was issued on Tuesday. The Bill, introduced by Sir Robert Gower, has the support of members of all three parties, and proposes to amend certain provisions of the Coal Mines Act, 1911, relating to the protection of horses and other animals used in mines. Provision is made for the inspection of every horse and other animal used in the mines once at least every three months by special inspectors. The onus is thrown on the owner, agent, or manager to show that when a horse or other animal had been sold he had taken every reasonable precaution to secure that such horse or other animal should receive proper treatment and care.—*The Times.*

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Sir Robert Thomas asked the Minister of Agriculture whether he had any further information from the Dutch veterinary authorities regarding an alleged cure for foot-and-mouth disease, which was brought to his notice last session, and if so whether he would lay the particulars before the House.

Mr. Guinness: Inquiries have been made of the Netherlands Department of Agriculture as to the results of tests of this preparation. Earlier tests did not show that the preparation has a preventive effect against foot-and-mouth disease, but the Ministry has asked to be informed of any matters of interest which may arise as a result of any further trials.

Sir Robert Thomas asked whether the Minister would allow a competent veterinary surgeon to investigate the cure referred to.

Mr. Guinness said that they got so many alleged preventatives that it would be impossible for the staff of the Ministry to hold themselves at the disposal of every foreign agricultural department.

Sir Robert Thomas: It has been stated that this is a definite cure.

Mr. Guinness: That is not the information we have received from the Netherlands Ministry of Agriculture.

Bovine Tuberculosis.

"The Chief Veterinary Inspector of the British Ministry of Agriculture and Fisheries is to be interviewed by members of the Glasgow Corporation's Committee under the Diseases of Animals' Acts in connection with consignments of tuberculous meat from Ireland," says *The Belfast Telegraph* of 27th November.

"The Corporation's veterinary inspector has reported that during the last and the present months large consignments of carcases (quarters and sides) of old cows slaughtered in Ireland have been shipped to Glasgow market, where on examination by him a considerable proportion had been found tuberculous and seized for destruction, and that if these old cows were to continue to be slaughtered in Ireland and their carcases shipped through various ports to markets in Great Britain instead of coming alive at the landing place where they could be examined properly, the detection of carcases affected with tuberculosis would be almost impossible.

"It is suggested that the animals should either be imported alive or if slaughtered in Ireland their carcases should be consigned to an Irish animals' landing place for veterinary inspection prior to being permitted to be removed therefrom for exposure for sale in a meat market or elsewhere.

"Statistics by the manager of Merklands Wharf showed that during the period from 1st January to 31st October of this year 1,132 old cows from Ireland had been landed at the wharf, and of these 737 or 65 per cent. had been detained for slaughter by order of the inspectors of the Ministry of Agriculture and Fisheries.

"These figures show the necessity for drastic action being taken."

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Perusal of the evidence given in a case described as "of great importance to the public," in which a Norwich butcher was fined on all counts "for exposing for sale meat which was condemned as unfit for food; for having in his possession at his slaughter-house meat intended for sale which was condemned as unfit for food; and for slaughtering for sale a cow and failing to give notice of diseased parts to the local authority," discloses the singular fact that none of the host of medical and other witnesses called was a veterinary surgeon.

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At a meeting of the Diseases of Animals Sub-Committee of the Essex County Council the Clerk reported that for the quarter ended June, under the Tuberculosis Order 176 animals were slaughtered, the total compensation paid being £930 13s.; the amount refunded from the Ministry was £697 17s. 9d. There was £278 10s. received for salvage, which left a profit of £45 16s. 9d.

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Professor R. G. White, of Bangor, at the recently held Welsh National Conference, convened by the Welsh Ministry of Agriculture at Aberystwyth, said that the Ministry of Agriculture should do something to encourage scientific selection of dairy bulls, by bringing out a scheme of super premiums to be awarded to bulls, the daughters of which had proved sufficiently meritorious as milk producers.

By this means, he believed tuberculosis could be eradicated from dairy herds in a few years, and it would do more than any amount of propaganda and advertising to secure an increased demand for milk.

The farmer was justified in regarding beef-producing qualities in cattle as of secondary importance where there was a ready sale for milk at a good price.

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"Rejuvenated" Horse Dies.

The Paris correspondent of the *Daily Express* states in his message of 25th November, that Rabelais, the great racehorse, which was "rejuvenated" by Dr. Serge Voronoff the week previous, at the age of twenty-eight, died suddenly at Maisons Lafitte of congestion of the lungs.

Rabelais, it appears, caught cold after the operation, and all the efforts of his owner, Count de Nicolay, and the trainers and veterinary surgeons to nurse him through the crisis proved in vain.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

Nov. 27th.—Major and Bt.-Col. E. C. Webb, O.B.E., F.R.C.V.S. to be Lt.-Col. (Nov. 28th), and remains seed.

Regular Army Reserve of Officers.

Lt.-Col. G. Conder, D.S.O., having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers. (November 25th).

H.M. Stationery Office Publication.

The undermentioned has been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2., and 28 Abingdon Street, S.W.1; Cardiff: 1 St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120 George Street.

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House of Commons Bills 1928—9.		
23. Coal Mines (Protection of Animals). To amend certain provisions of the Coal Mines Act, 1911, relating to the protection of horses and other animals used in mines.	0 1	0 1½

The Whispering Chauffeur.—The *Leicester Mail* reports a curious incident. It appears that a well-known Leicester resident sent his chauffeur-gardener to fetch some straw for his magnificent Airedale. The man, who speaks very quietly, took the dog with him and called at a chemist's shop. "Straw for the dog," he said in his usual whisper. Unfortunately, the assistant thought he said, "Destroy the dog," and gave him poison in the back garden. The chauffeur himself held the dog while this was done, and when the chemist remarked. "He'll soon be gone now," he realised that a mistake had been made. "I thought you were giving him something to quieten him while you got the straw," he explained in his confusion. In an instant the chemist realised the situation, and summoning his assistant, gave the dog a series of emetics and antidotes. They worked on him for over two hours, walking him round and round the garden. Their efforts were rewarded, and a veterinary surgeon stated that the saving of the dog's life was a miracle. The whispering chauffeur is now being replaced by someone who can speak up.

An Eye Shield for Dogs.—We have pleasure in drawing the attention of our readers to a recently-introduced appliance which will undoubtedly prove a boon to practitioners who are constantly being faced with the problem of securing adequate and immovable protection for dressings applied to optical injuries in their canine patients.

As indicated in our advertisement columns, Messrs. Spratt's Patent Limited have placed on the market Captain Gibson's simple but most efficient device, the illustration of which, as appearing in their announcement, fully explains its nature and the method of application. The shield itself is, of course, adaptable to either eye, and, with the leather frame work which carries it, is procurable in varying sizes, to fit any type of dog.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the Lancashire Division N.V.M.A., from Mr. J. Spruell, Hon. Secretary.

Communications from Professor J. B. Buxton (Cambridge), Mr. Henry Gray (Kensington), Major H. E. Irwin (Tenterden) and Mr. W. Lyle Stewart (Newcastle).

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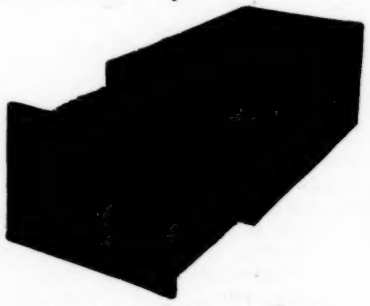

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